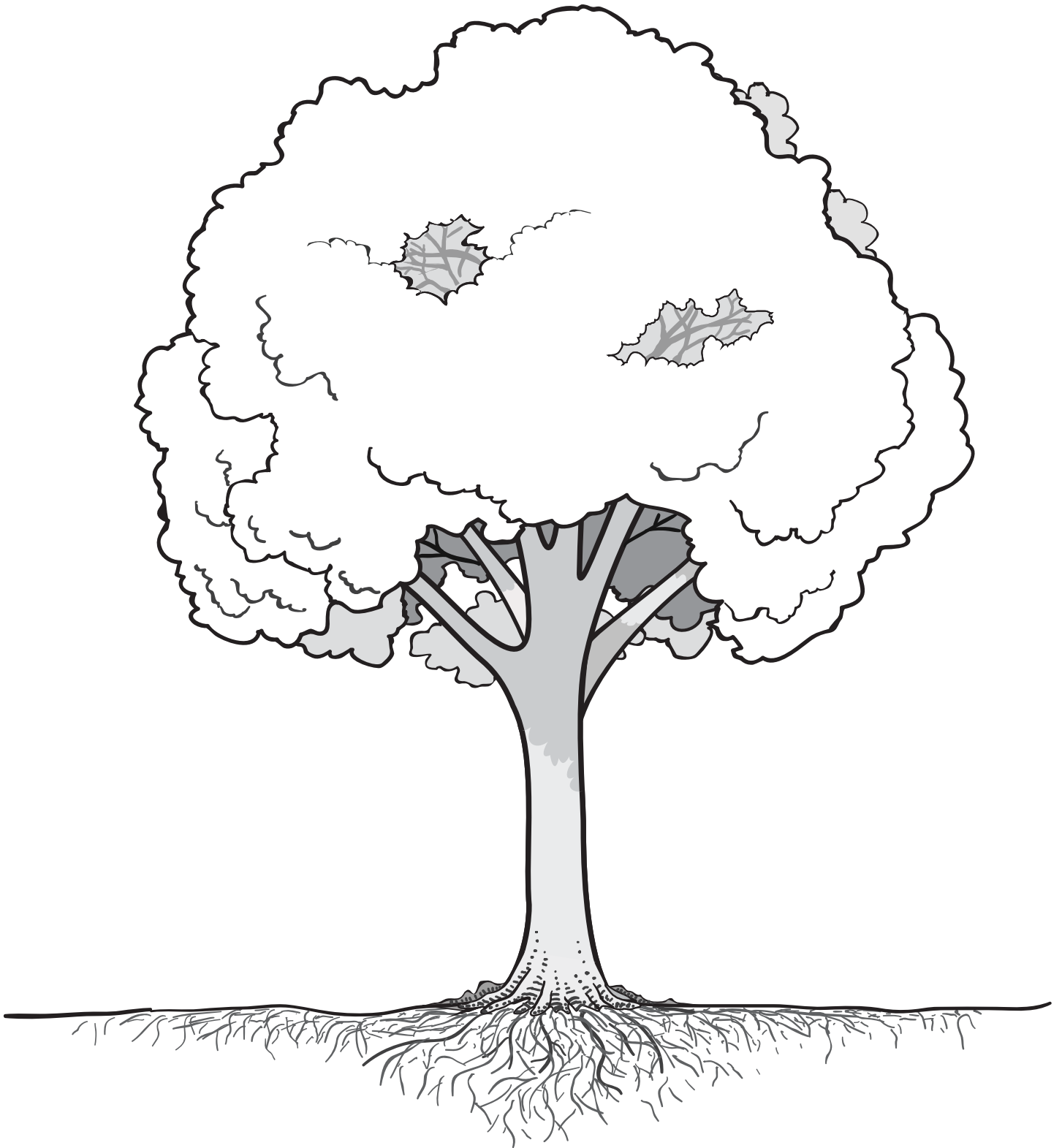


Town of Lexington, Massachusetts
TREE MANAGEMENT MANUAL



Prepared by the Lexington Tree Committee

Town of Lexington © 2009 second edition

Town of Lexington, Massachusetts

TREE MANAGEMENT MANUAL

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1st Edition, Town of Lexington, 2003

2nd Edition, Town of Lexington, 2009

Subject to periodic revision as warranted. Consult the Tree Committee or the Town of Lexington websites for additional illustrations and revisions at www.lexingtonma.gov/committees/tree.cfm or www.lexingtonma.gov

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I PURPOSE

In April 2001, the Lexington Town Meeting approved a Tree Bylaw (Part 1 – General Bylaws, Chapter 120, TREES), which gave increased protection to the town’s living infrastructure. The bylaw affects trees on public land and, in certain cases, trees on portions of private property. From time to time the Tree Committee, Town Meeting and the Selectmen modify this bylaw. Please refer to the Town website (Page 21) for latest revisions.

This Tree Management Manual is the approved standard for tree care in Lexington. Its purpose is to set forth details of current standards and practices for arboriculture and shall apply to work done by town employees, developers, builders, contractors and private individuals. It should be reviewed and updated by the Tree Committee regularly.

II GOALS

The goals of the Town of Lexington are:

- A. To encourage both professionals and amateurs to plant and maintain trees correctly.
- B. To achieve close cooperation between the Tree Warden, all town departments and private developers on matters that affect Lexington’s trees in order to preserve and improve the tree canopy in Lexington.
- C. To continue a tree-by-tree inventory on public land with information about location, species, size and health of each tree in a database that can be updated on a regular basis. This will be the foundation for current maintenance, future planting and management plans.
- D. To replace trees lost during the preceding year on at least a one-for-one basis.
- E. To submit an annual budget for planting replacement trees.
- F. To promote selective natural regeneration of hardy native trees within the right of way, on town conservation lands, parks, and other public spaces.
- G. To encourage private funding as a supplement to the tree budget. These sources include specific Lexington trust funds available for public tree planting, such as the Blossom, Smith, Taylor and Emery Funds, funds specific to park or conservation lands, commemorative tree planting, state grants, and individual, neighborhood or corporate fund raising.
- H. To institute a town-wide education program about trees ranging from periodic newspaper articles, publicity on tree-related events such as Arbor Day and Tree City USA recognition, tree walks, inserts in town-wide mailings and coordination with school curricula.

- I. To help provide a low-cost source for street trees by developing and caring for the Town Tree Nursery, a Conservation Commission project located on conservation land.

III ENABLING LEGISLATION

The following provisions of law regulate and affect public trees in Lexington, and set forth the duties of the Tree Warden:

Massachusetts General Laws, Chapter 87, (Shade Trees) Sections 1-12 (See Appendix II, Page 29)

Massachusetts General Laws, Chapter 40, (Scenic Roads) Section 15 C (See Appendix III, Page 32)

Code of the Town of Lexington, MA, Part I – General Bylaws, Chapter 120, TREES (See Appendix I, Page 23).

IV JURISDICTION OF TOWN BOARDS AND DEPARTMENTS

A. JURISDICTIONS

1. Department of Public Works, Public Grounds Division

The Superintendent of Public Grounds (the Tree Warden) shall be responsible for all public trees in Lexington. This Division shall initiate and supervise the selection, planting and maintenance of most of the town's street trees. (See Lexington Tree Bylaw, §120-5, Appendix I, Page 25.)

2. Department of Public Works, Engineering

Planting shall be coordinated with future town projects including betterments, sidewalk improvements, street construction, schools and school renovations, Senior Centers, libraries, public works facilities, recreation facilities and other municipal buildings and facilities. The Department of Conservation and Recreation (DCR) guidelines recommend that a minimum of 2% of the street/curb/sidewalk construction budget be for tree planting.

3. The Lexington Planning Board and the Lexington Planning Department

The Board and the Department shall recommend tree preservation and/or planting as part of Special Permit Projects and other developments including new and renovated buildings and parking facilities. In this process the Planner shall consult with the Tree Warden and Tree Committee and follow the standards and procedures set forth in this Manual.

4. Other Town Commissions, Committees and Entities

The following shall also consult with the Tree Warden and Tree Committee and follow the standards and procedures set forth in this Manual.

- a. Board of Selectmen

- b. Board of Appeals
- c. Conservation Commission
- d. Design Advisory Committee
- e. Historic Commission
- f. Historic Districts Commission
- g. Lexington Historical Society
- h. Permanent Building Committee
- i. Recreation Committee
- j. School Committee
- k. Sidewalk Committee
- l. Utility companies

B. TREE REMOVAL — STATUTES

1. Public Tree Removal

If violations occur, interested parties may contact the Tree Warden.

a. Process

Refer to Massachusetts General Laws, Chapter 87 (Appendix II, Page 29).

Section 2 (Powers of the Tree Warden)

Section 6 (Penalties)

Section 11 (Injury to Trees of another Person)

Section 12 (Injury to Shrubs, Trees ... in a public way or place)

Refer to Town of Lexington, Chapter 120, TREES (Appendix I, Page 23).

§120-3 (Definitions for Public Shade and Town Trees)

§120-7A (Scope)

§120-7B (Procedures)

§120-10 (Enforcement)

b. Criteria

Refer to Town of Lexington, Chapter 120 TREES (Appendix I, Page 23).

§120-4A (Applicability)

§120-9 (Emergencies and Exemptions)

c. Enforcement

§120-10 (Enforcement)

2. Private Tree Removal

If violations occur, interested parties may contact the Building Inspector or the Tree Warden.

a. Process

Town of Lexington, Chapter 120 TREES

§120-3 (Definition of a protected tree) (See Figure 10, following Figure 9)

§120-8 (Scope)

Other trees on private property remain under the control of the owner. Property owners are encouraged to have their trees inspected and maintained routinely by a certified arborist, both for the health of the trees and for the safety of residents and the public.

b. Recommendations

The Town advises property owners to consider the following before removing a tree from their private property:

- (i) Is it healthy? If not, can it be treated?
- (ii) Is it a unique or rare species?
- (iii) Can your plans be accommodated any other way, such as through pruning?

C. DONATING TREES TO THE TOWN

1. Planting trees on public land

As stated in the Tree Bylaw (§120-7C Appendix I, Page 26), any person seeking to plant a tree on public land under the jurisdiction of the Tree Warden must obtain written permission from the Tree Warden.

2. Gift of tree-planting funds

The Town of Lexington welcomes tree-planting fund donations in any amount. You may call the Tree Warden at the DPW to discuss species, placement, and current charges. The Town's Tree Committee has a Commemorative Tree Program under which you may donate a tree in honor or in memory of a person. There is a Commemorative Ledger for Trees kept permanently in the Cary Memorial Library, in which you may provide details of the person you wish to honor. For details refer to the brochure, available at the DPW or Town Hall.

3. Donation of trees for transplanting

The donation of a living tree to be transplanted from private to Town property may be accepted at the discretion of the Tree Warden. Factors in the decision will be the species and condition of the tree, current Town needs, and the availability of funds to transplant the tree. Only fine or unusual specimens will be considered, due to difficulty and expense in transplanting large trees.

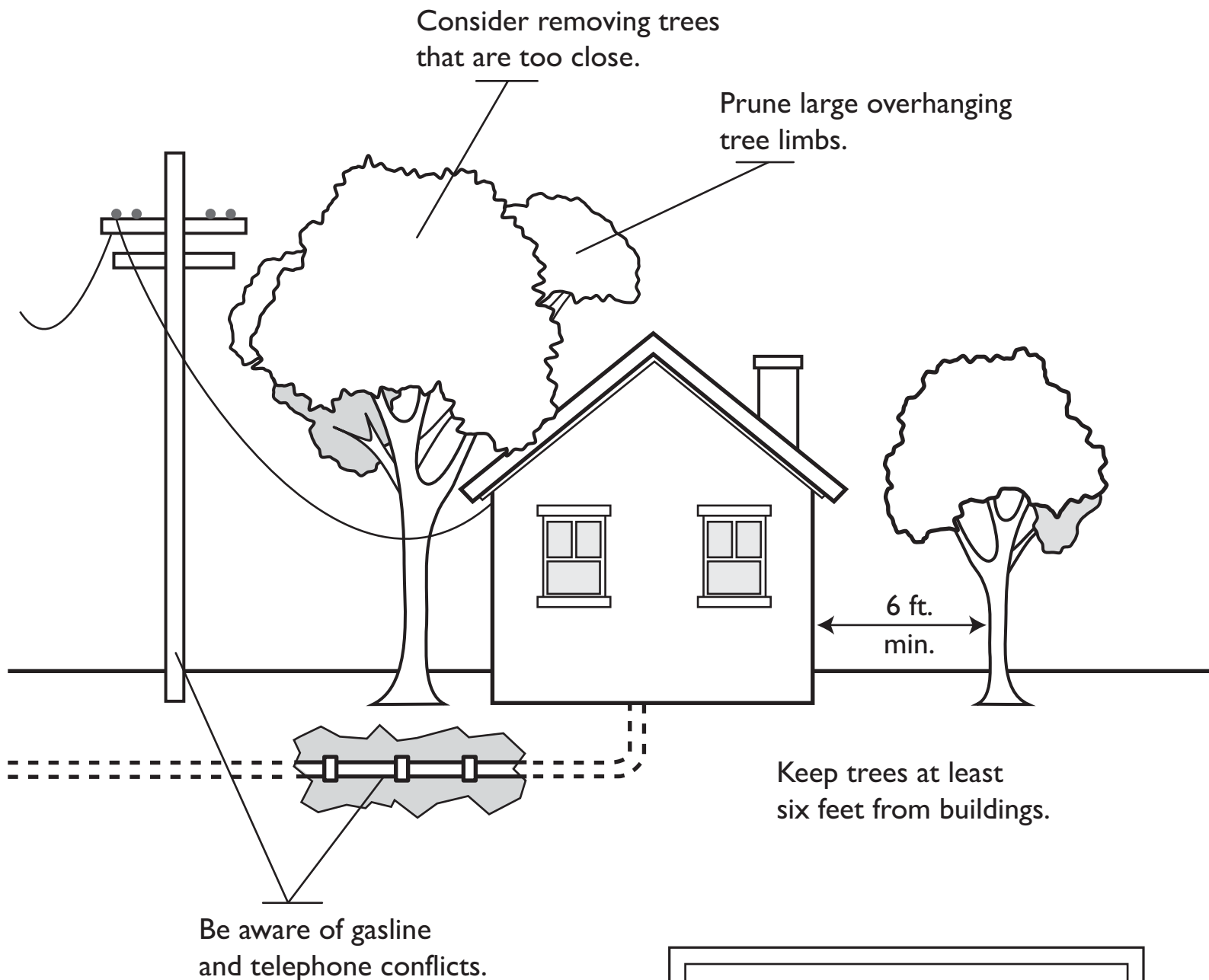
4. Donating a street tree

Homeowners may purchase a street tree, which the Town will plant, resources permitting. Apply to the Tree Warden.

Figure I

SELECT TREES ACCORDING TO THE SITE

AVOID FUTURE PROBLEMS



Before excavating call **Dig Safe:**
1-888-344-7233

V TREE PLANTING**A. TREE SELECTION****1. Projected characteristics**

Mature height, projected longevity, rate of growth, hardiness, soil and microclimate requirements (sun or shade, wet or dry), wind and salt tolerance, ornamental attributes, and disease/pest resistance are all factors leading to the selection of a tree species to fit a site.

2. Individual selection

Choose a healthy specimen:

- a. Examine the top of the rootball and reject those with girdling roots – roots that grow partially or completely against the tree's trunk, strangling it. (See Figure 4 following Figure 3.)
- b. Where possible, avoid grafted stock.
- c. Examine the trunk and reject those with severe wounds.
- d. Check for desired form and branching.
- e. Check that foliage has good color and is not wilted.

3. Appropriateness to site

The choice of species in various locations depends on surrounding circumstances: for instance potentially large trees are only appropriate in parks or on broad boulevards where there is plenty of room for full growth. If obstructions such as utility wires limit the available space, select a dwarf species or varieties with growth rates that will not create future problems. (See Figure 1, facing Page 6.)

4. Variation

The Town should not plant a large number of the same species in one area or on one street, to avoid the dangers associated with disease. This prevents monoculture so that a balance can be achieved between uniformity in defined areas and visual variety across the town.

5. Species to avoid

Several tree species are included on the Massachusetts Prohibited Plant List, published in 2005, including Norway Maple, Sycamore Maple, Tree of Heaven, Black Locust, Glossy and Common Buckthorn, and Amur Cork-tree. As of January 1, 2009 all of these plants are prohibited from sale, purchase, trade or propagation. Please avoid even transplanting or otherwise nurturing these trees, which are harmful to the environment. Pull out saplings where you find them, especially of Norway Maple. Refer to this Manual, Section IX, Invasive Species, and to www.mass.gov/agr/farmproducts/proposed_prohibited_plant_list_v12-12-05.htm for the full list.

B. LIST OF RECOMMENDED TREES

1. Recommended Tree Species

(An asterisk * denotes a species native to North America. These species are preferred to non-native species, because they contribute to the local ecology. They support beneficial insects and birds and thus enhance the biodiversity of plants and animals.)

Scientific Name	Common Name	Height	Notes
<i>Acer griseum</i>	Paperbark Maple	25 – 35	Interesting bark
<i>Acer pensylvanicum</i> *	Striped Maple	25 – 30	Shade loving, striped bark
<i>Acer rubrum</i> *	Red Maple	50 – 75	Tolerates wet sites
<i>Acer saccharum</i> *	Sugar Maple	60 – 80	Salt intolerant, vivid fall colors
<i>Amelanchier laevis</i> *	Serviceberry	15 – 30	4-season interest, edible berries
<i>Betula lenta</i> *	Sweet Birch, Black Birch	40 – 55	Resistant to borers; twigs have wintergreen flavor
<i>Betula nigra</i> *	River Birch	40 – 75	Including cultivars
<i>Carpinus betulus</i>	European Hornbeam	40 – 60	Columnar varieties; useful in hedges
<i>Carpinus caroliniana</i> *	Ironwood, Blue Beech, Musclewood	20 – 40	Tolerant of almost any planting site; good fall color
<i>Carya glabra</i> *	Pignut Hickory	60 – 80	Most adaptable
<i>Carya ovata</i> *	Shagbark Hickory	70 – 100	Interesting bark
<i>Catalpa speciosa</i> *	Catalpa	50 – 60	Large leaves, flowers & pods
<i>Celtis occidentalis</i> *	Hackberry	50 – 60	Attracts birds, good street tree
<i>Cercidiphyllum japonicum</i>	Katsura	40 – 60	Prefers moist ground
<i>Cercis canadensis</i> *	Redbud	15 – 25	Tolerates shade, strong spring color
<i>Cladrastis kentukea</i> * (formerly <i>C. lutea</i>)*	Yellowwood	30 – 50	Spreading and low branching, good in lawns
<i>Cornus alternifolia</i> *	Pagoda Dogwood	15 – 25	Underused but desirable native
<i>Cotinus obovatus</i> *	American Smoketree	20 – 30	Intense fall mixed colors; good street tree under wires.
<i>Crataegus phaenopyrum</i> *	Washington Hawthorn	25 – 30	Fall berries attract birds

Scientific Name	Common Name	Height	Notes
<i>Fagus grandifolia</i> *	American Beech	50 – 70	High wild-life value, edible nuts, imposing tree
<i>Fraxinus americana</i> *	White Ash	50 – 80	Grows wide as well as tall
<i>Fraxinus pennsylvanica</i> *	Green Ash	50 – 60	Fast growing, tough
<i>Ginkgo biloba</i>	Ginkgo	45 – 55	Plant only males
<i>Gleditsia triacanthos</i> * (thornless)	Honeylocust	40 – 80	Gives filtered shade, fall gold
<i>Gymnocladus dioica</i> *	Kentucky Coffeetree	50 – 70	Male preferably, an under-used tree
<i>Halesia tetraptera</i> *(formerly <i>H. caroliniana</i>)	Carolina Silverbell	30 – 40	White bell-like flowers, tolerates shade
<i>Liquidambar styraciflua</i> *	Sweet Gum	60 – 75	Fall color, star-shaped leaf
<i>Liriodendron tulipifera</i> *	Tuliptree	70 – 90	Tallest native tree
<i>Maackia amurensis</i>	Amur Maackia	20 – 30	Good street tree, under-used
<i>Maclura pomifera</i> *	Osage Orange	20 – 40	Interesting orange bark, large fruits (female only)
<i>Magnolia stellata</i> , especially 'Centennial'	Star Magnolia	15 – 25	Needs moisture, flexible usage even on street
<i>Malus spp.</i>	Flowering Crabs	20 – 25	Native and Asian
<i>Nyssa sylvatica</i> *	Tupelo, Gum Tree	40 – 70	Good in groves, prefers moisture
<i>Ostrya virginiana</i> *	American Hophornbeam	25 – 40	Unique capsules, handsome bark
<i>Oxydendrum arboreum</i> *	Sourwood	25 – 30	4-season interest
<i>Platanus x acerifolia</i>	London Planetree	70 – 100	Interesting bark, vigorous, tough
<i>Platanus occidentalis</i> *	American Sycamore, Buttonwood	70 – 100	Interesting bark
<i>Quercus, spp.</i> *	Oak species: Bur, Chestnut, Pin, Red, Scarlet, Swamp White, White	60 – 80	Plant when young, Best butterfly and beneficial insect attractor The National Tree
<i>Styphnolobum japonicum</i> , formerly <i>Sophora japonica</i>	Regent Scholartree	50 – 70	Mid-summer flowers
<i>Syringa reticulata</i>	Japanese Tree Lilac	20 – 30	White June flowers; tough

Scientific Name	Common Name	Height	Notes
<i>Tilia americana</i> *	Basswood	60 – 80	Fragrant blossoms
<i>Tilia cordata</i> ‘Greenspire’	Littleleaf Linden	40 – 60	Neat shape
<i>Ulmus americana</i> ‘Princeton’*	American Elm	60 – 80	Disease resistant
<i>Ulmus parvifolia</i>	Lacebark Elm	40 – 50	Disease resistant, beautiful bark
<i>Zelkova serrata</i>	Zelkova	60 – 70	Hardy

2. Undesirable Tree Species

If you have these trees, consider removing them. (Further information can be found in Section IX, Invasive Species.) These trees are not considered as Protected Trees under the definitions in the Lexington Tree Bylaw, §120-3.

Scientific Name	Common Name	Height	Notes
<i>Acer platanoides</i>	Norway Maple	40 – 50	Invasive
<i>Ailanthus altissima</i>	Tree of Heaven	40 – 60	Invasive
<i>Rhamnus cathartica</i> , and <i>Frangula alnus</i> (formerly known as <i>Rhamnus frangula</i>)	Common Buckthorn Glossy Buckthorn	18 – 25 10 – 12	Both invasive

C. PUBLIC TREE SITE SELECTION

1. At best, plant trees along a public right of way between four and 20 feet from the edge of the road pavement. However, the intent of this policy is to provide flexibility in allowing planting locations to be selected on a street-by-street basis, particularly where there is a scenic or historic situation. (See ‘First Priority’, Section E, below.)
2. Encourage off-berm tree plantings on private property (‘berm’ in this case means the planting strip between curb and sidewalk).
3. Place trees where they will make the greatest contribution to providing shade and improving street appearance.
4. Provide maximum canopy coverage over parking lots. Group trees in a park setting or parking lot to provide a larger volume for unrestricted root growth. Plant street trees in a ‘treeway’ as an option to provide increased soil volumes. (See Figure 2, facing Page 12.)

D. PUBLIC TREE PLANTING

1. The Public Works Department advises the Tree Warden about projects in the coming year requiring the planting of new trees, as recommended by the Planning Department and other Town Committees.

2. The Tree Warden seeks advice from the Tree Committee and recommends the number and species of trees for those projects when they go out to bid. He or she considers current environmental and arboricultural changes tending to favor certain species and disqualify others, such as those affected by Asian longhorned beetle, anthracnose and blights.
3. The Lexington Tree Inventory should have data available on recently planted trees.

E. PRIORITIES FOR TREE PLANTING LOCATIONS

The Lexington Tree Committee sets the following priorities based on the recommendations of the Tree Warden. The Tree Committee shall conduct a survey periodically to identify public areas most in need of trees, in order of priority:

1. Streets or public spaces where there has been significant tree loss.
2. Sites where new development or town projects require additional plantings.
3. Prominent public places in need of new trees.
4. Sites designated by the Tree Warden and Tree Committee as off-berm areas.
5. A location where a tree removal occurs is automatically put on a priority list for replacement; no request is needed. Areas where new plantings have not survived are also added to this list.
6. If a public tree is lost from in front of a residence or business, the Tree Warden will discuss its replacement with the owner. The owner will be encouraged to consider off-berm planting where appropriate.
7. Requests for non-replacement trees shall be addressed when first and second priority plantings have been completed, new trees are still available, and designated funding for non-replacement trees is available.

F. OFF-BERM PLANTING ON PRIVATE PROPERTY

1. Planting trees off-berm (that is, not on the planting strip between curb and sidewalk) has the following benefits: it avoids root constriction and damage from road chemicals and street traffic, it minimizes sidewalk problems due to root growth and it reduces maintenance and replacement tree costs, and it also enables more tree planting throughout the Town.
2. Homeowners may contact the Tree Warden and request a street tree to be planted in front of their house, "off-berm". The Tree Warden, with the advice of the Committee and with the landowner's approval, may designate other off-berm sites no more than 20 feet from the curb or edge of pavement at the front of the property. This is appropriate where there is not an acceptable planting location in the right-of-way.
3. The agreement, signed by both parties, will consist of the following:
 - a. The Town will purchase and plant the agreed-upon tree or trees.
 - b. The trees will be planted in the setback area only.

- c. The Town will guarantee the trees(s) for a period of one year.
- d. The private property owner will be responsible for the watering and care of the tree(s) from the moment of planting.
- e. After the one-year warranty period, the tree will become the sole responsibility of the property owner. It will not be considered a Town tree.

G. SPACING OF STREET TREES

1. *Spacing*: The ultimate size of the tree determines the spacing between street trees. The Tree Warden may modify standard spacing for safety reasons, when space is limited or to achieve a certain design effect.
2. *Next to buildings*: Avoid planting too close to a building, driveway, alley, fire hydrant, or other permanent structure. An exception can be made for design effect, such as using the espalier method against a building wall, or when columnar trees are used.
3. *Sidewalk planting*: Tree plantings in a paved sidewalk must have a minimum of 35 square feet of cutout area, unless structural soil is used. If structural soil is used, refer to current best practices. If there is more than one tree to be planted, consider excavating all the berm between the two trees. (See Figure 2, facing Page 12.) The tree must be set back from the street a minimum of 30 inches from its center to the face of the curb.
4. *Utility wires*: Under utility wires, choose trees whose habits are compatible; for example low-growing species, or less densely branched species such as locust, ash, or certain oaks. Proposed tree planting over underground utilities is subject to review by the Tree Warden.

VI PLANTING GUIDELINES

Planting a tree is easier than it used to be, not from new technology but because of new research in planting practices that has dispelled many myths. Research has shown that improper planting techniques, particularly planting *too deep* is a major cause of tree death. Research has also shown that accepted practices governing the size and shape of the planting hole and the nature of the “backfill” mixture require some modification. These planting guidelines have been developed by Gary Watson, published by the International Society of Arborists (ISA). The Arnold Arboretum and University of Massachusetts Cooperative Extension Service support these guidelines.

A. SITE PREPARATION

1. *Site preparation*: See Figure 3, following Figure 2, for information on planting guidelines and site preparation.
2. *Dig Safe*: Before excavating tree pits, call Dig Safe. Toll-free telephone number for all states: 1-888-344-7233 (as of 2009).

Figure 2

STREET TREEWAY

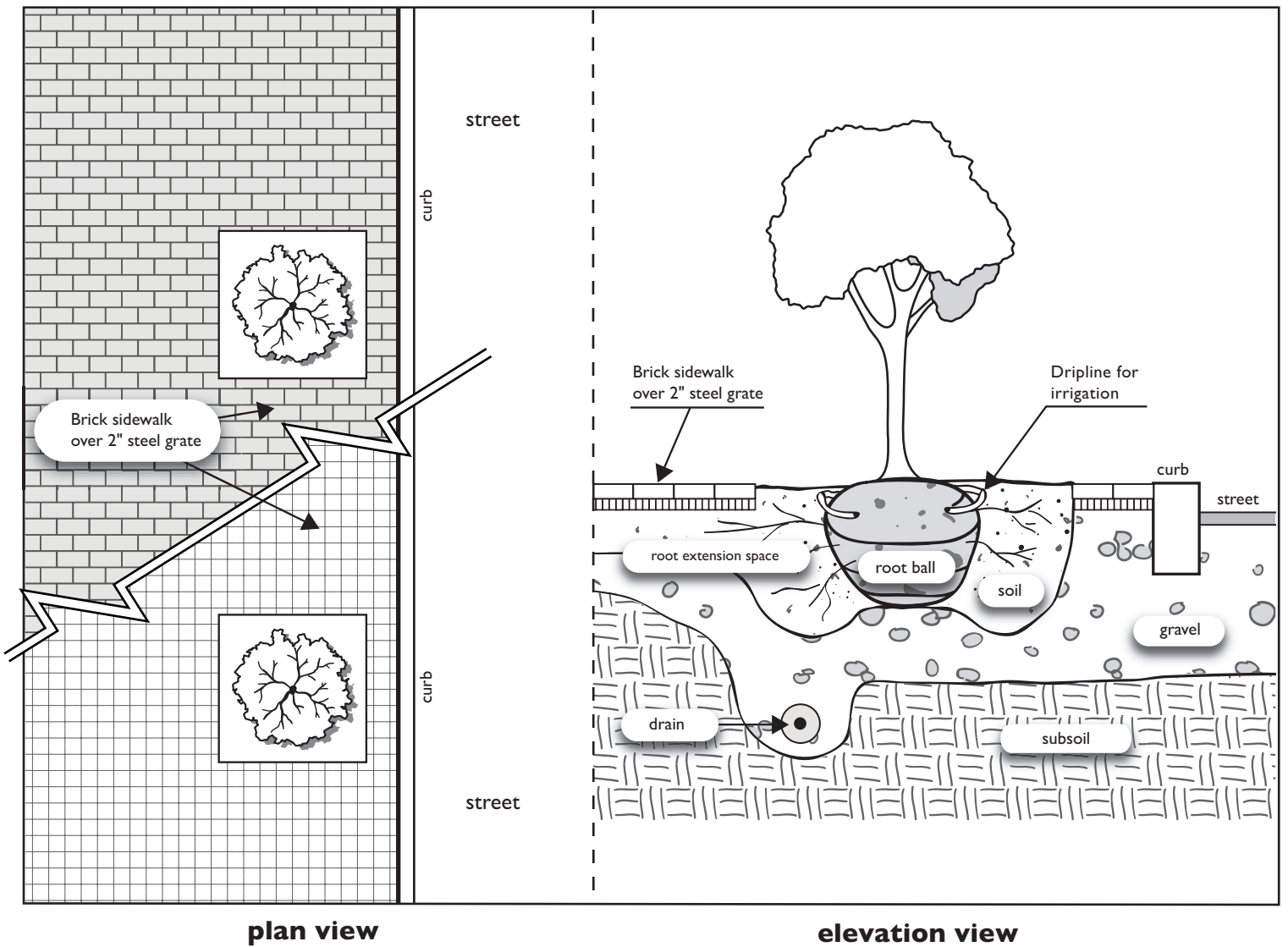
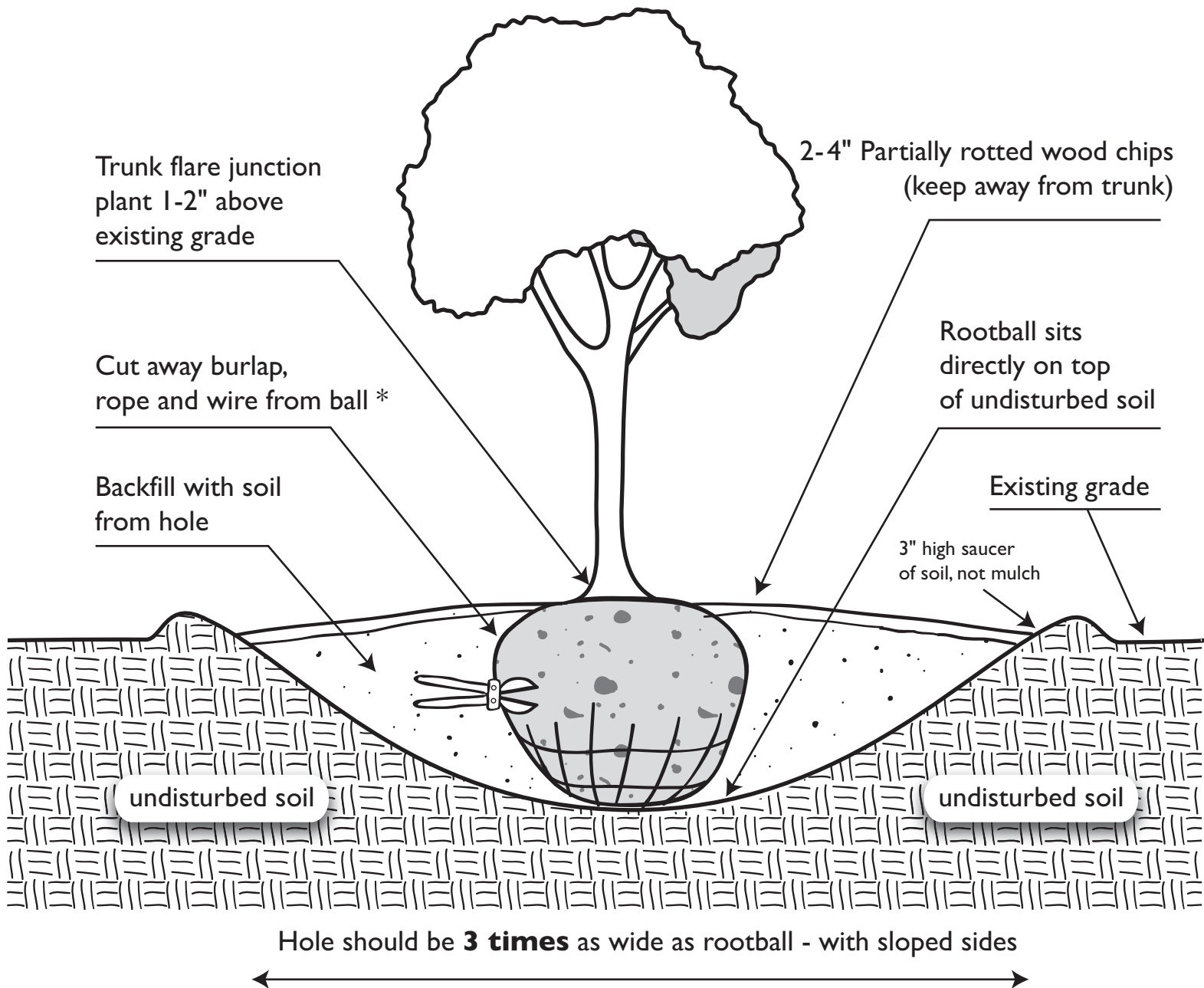


Figure 3

TREE PLANTING GUIDELINES (BALLED & BURLAPPED)



* For container plants - remove container and loosen roots with knife or hand rake

Figure 4

TRUNK GIRDLING ROOTS

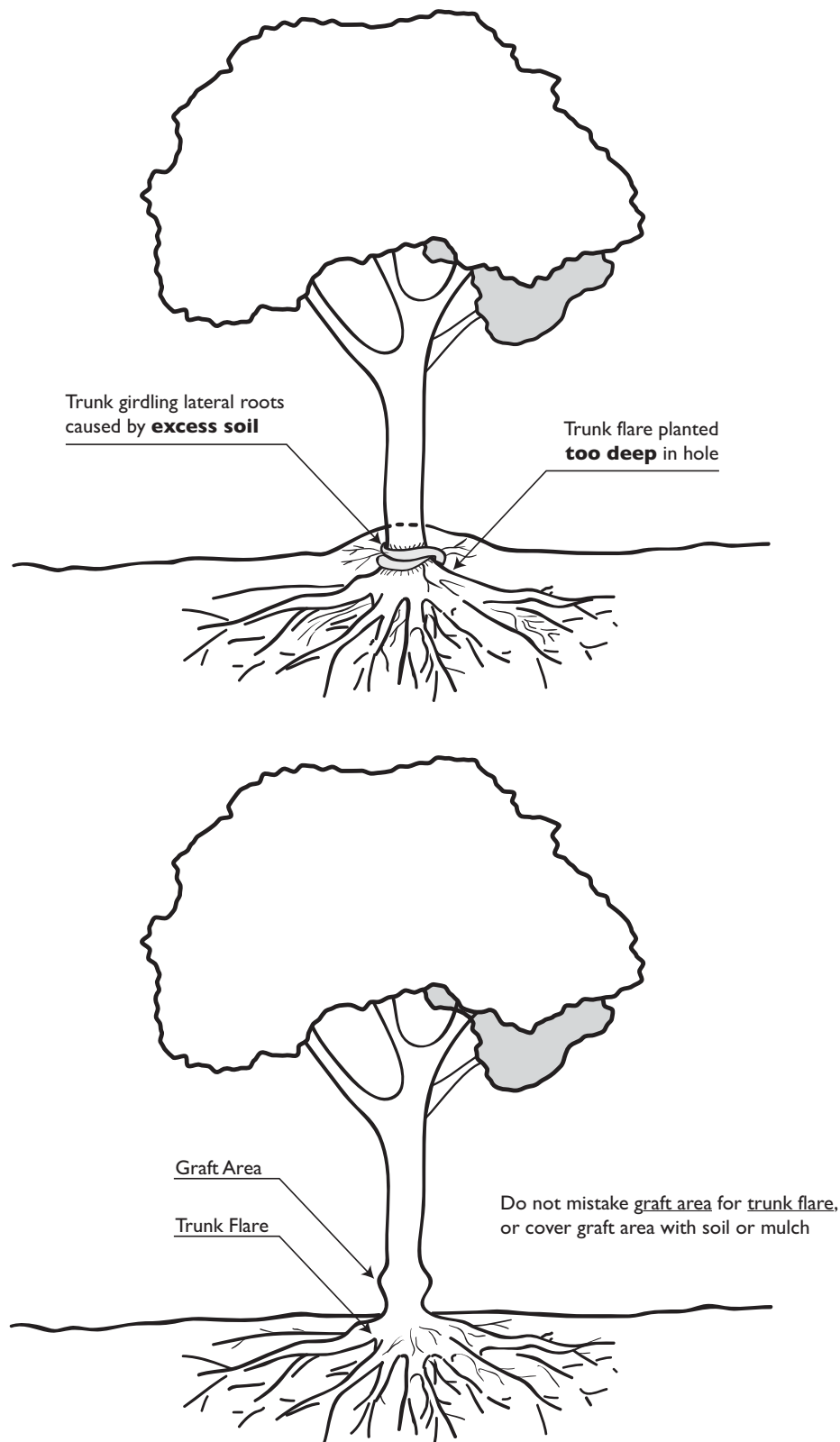


Figure 5

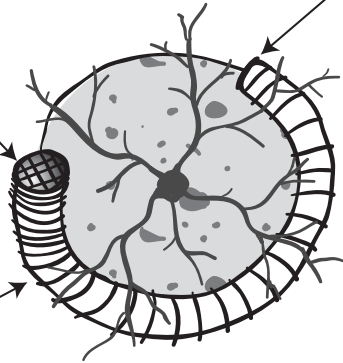
WATERING TUBE

PLAN VIEW

Grated top cap removable for inserting hose

Closed end cap

Flexible perforated tubing 6-8 linear feet, 4" in diameter



SPECIFICATIONS

Flex Tubing: ADS 40PI00

Grated End Cap: NDS-11

End Cap: NDS 4-32

DIMENSIONS/CAPACITY

Tube: 4" diameter x 8' long
(capacity = 4 gallons)

ELEVATION VIEW

Flexible perforated tubing, 4" in diameter

2-4" Bark mulch layer
(keep away from trunk)

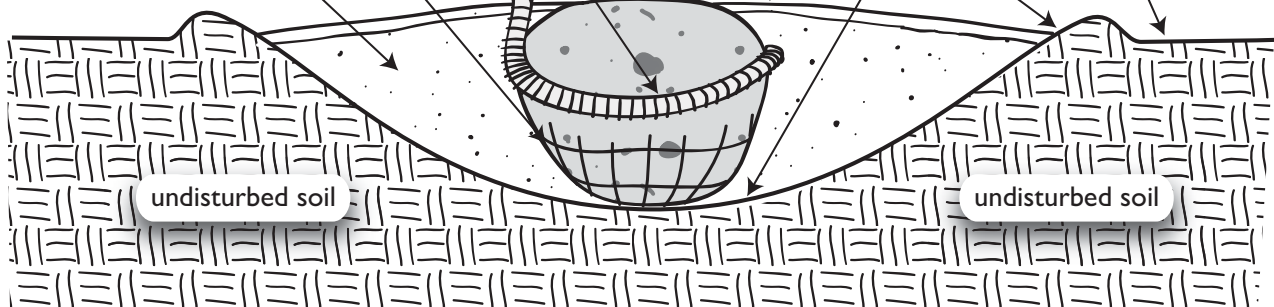
Remove as much wire cage and burlap as possible *

Rootball sits directly on top of undisturbed soil

Backfill with soil from hole

Existing grade

3" high saucer of soil, not mulch



undisturbed soil

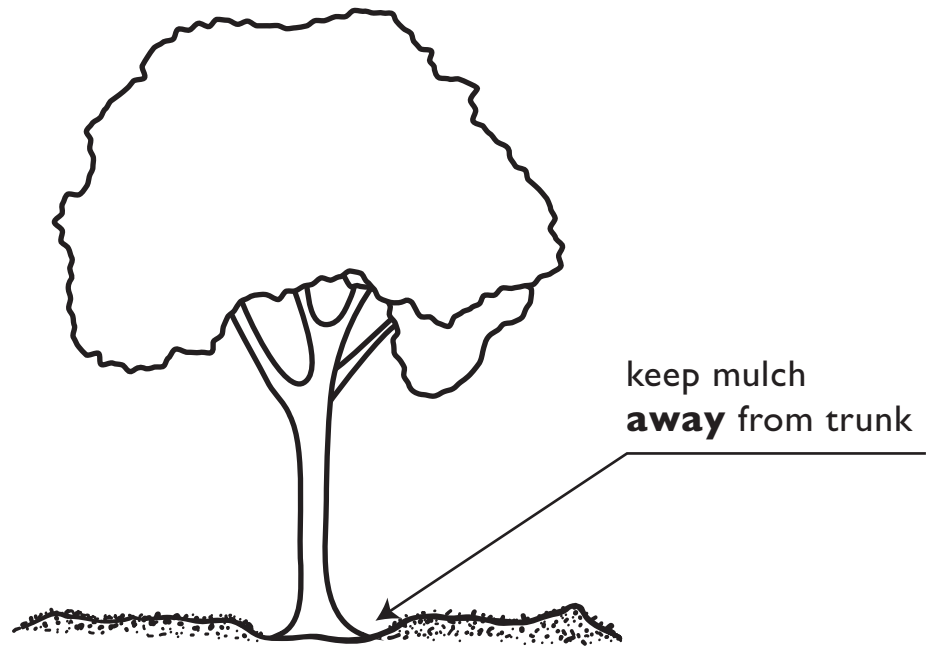
undisturbed soil

Hole should be **3 times** as wide as rootball - with sloped sides

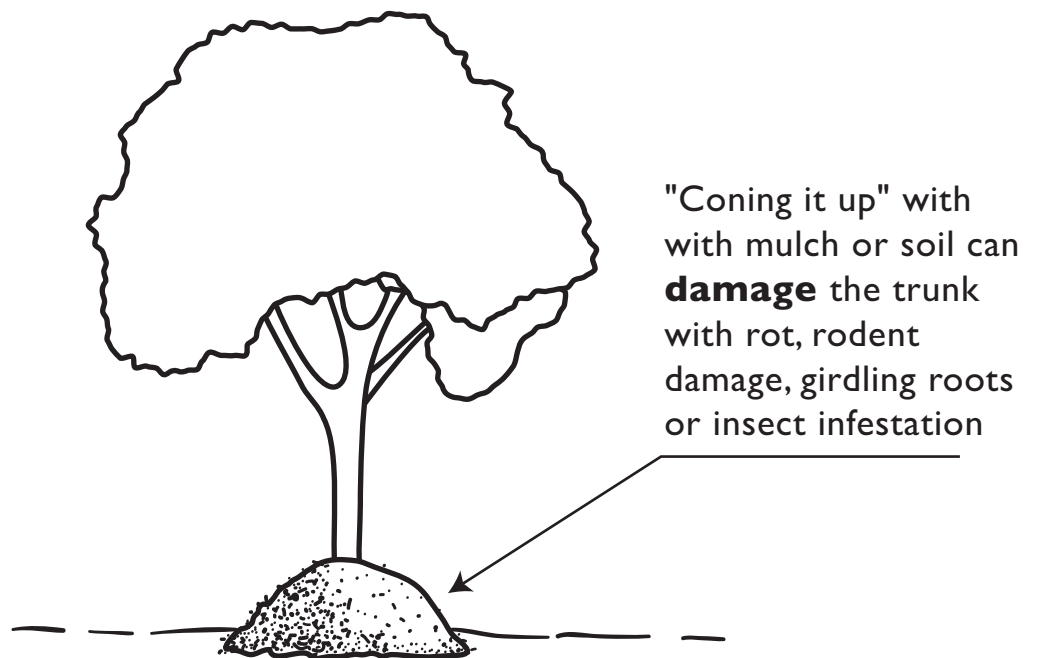
* For container plants - remove container and loosen roots with knife or hand rake

Figure 6

CORRECT USE OF MULCH



RIGHT



WRONG

3. *Depth of hole:* Dig the planting hole no deeper than the root ball. It is imperative to expose the trunk flare on each balled and burlapped (B&B) tree so that the depth of the planting area can be properly measured. ***It may be necessary to pull back excess soil around the trunk*** to locate the trunk flare, which is the point at which the roots begin to branch from the trunk. Some trees are grafted above the flare; do not mistake the graft bulge for the flare. The feeder roots of most woody plants are within the top 10 to 12" of the soil. (See Figure 4, following Figure 3.)
4. *Diameter of hole:* Dig the hole at least three times the diameter (and where possible, aerate as much as five times the diameter) of the root ball, making sloped sides, as shown in the diagram. Leave the bottom of the hole firm and about 1" higher than the depth of the root ball as measured from the point of the trunk flare to the bottom of the root ball. The shallow hole is needed so the plant can sit on a firm base of undisturbed soil that won't settle with time. (See Figure 3, following Figure 2.)
5. *Soil amendments:* Don't amend the soil unless planting in building rubble, or in poor or severely disturbed soils. (See Section VI B. 4. *Backfilling:*)

B. PLANTING DIRECTIONS

1. *Placing tree in hole:* Lift tree into hole by root ball, not trunk. Check to see that the trunk flare is one inch above existing grade.
2. *Root wrappings:* Remove all plastic wrappings. Cut the top third of the wire baskets back to below grade with bolt cutters. Cut away and remove strings and natural burlap from top half of root ball. Complete removal of wire is permissible, but take care that soil stays around roots.
3. *Container trees:* If plant is container-grown, cut and remove container. Inspect root ball for girdling roots. (See Figure 4, following Figure 3.) If severely matted (container plants have a tendency to become root-bound), use a knife or a small hand rake to open up the circling root ends and loosen the soil. Plant no deeper than it was in container. (For site preparation, see Figure 3, following Figure 2.)
4. *Backfilling:* Begin refilling with soil removed from hole. Mixing with a large amount of organic amendments such as peat moss is not recommended. Aged compost or quality topsoil may be used to supplement the existing soil. To avoid air pockets, water the soil halfway through the backfill process. After the water drains away, finish backfilling and water again thoroughly, using a shovel handle to work out air pockets. Pre-soak hydrogel crystals for 30 minutes, and mix into backfill according to packet directions.
5. *Watering tube:* Bury a watering tube if appropriate to site. (See Figure 5, following Figure 4.)
6. *Saucer:* Build a three-inch high saucer of soil around the outer edge of the hole to retain water

and allow it to soak down to the roots.

7. *Mulch*: Spread a two-inch layer of organic mulch (shredded bark or wood chips) in a band about three times the diameter of the root ball. Leave a radius of three inches of bare soil around the trunk. Deep layers of mulch are harmful, especially next to the trunk. Peat moss should never be used as mulch because it does not absorb water well. (See Figure 6, following Figure 5.)
8. *Staking*: Staking is not necessary for all trees. If the root ball is not stable, the trunk should be staked with arbor tape or other soft material (not wire) as low as possible, to allow the trunk to sway slightly. Remove guy tape after one growing season unless the tree is very large or on a windy site. If the tree is at risk of being hit by a car door, install a protective stake or two.
9. **Water. Water is the critical factor for tree survival.** Water twice weekly for a month after planting, by filling the saucer around the tree, and weekly thereafter through one growing season. Use 5 gallons per week per inch of caliper. The buried watering tube is helpful in watering sloped sites. (See Figure 5, following Figure 4.) Commercially-available watering bags are also useful during the growing season; remove them for the winter. Water regularly through several years, regardless of natural rainfall. Over-watering is also harmful. Do not keep the soil continuously saturated.

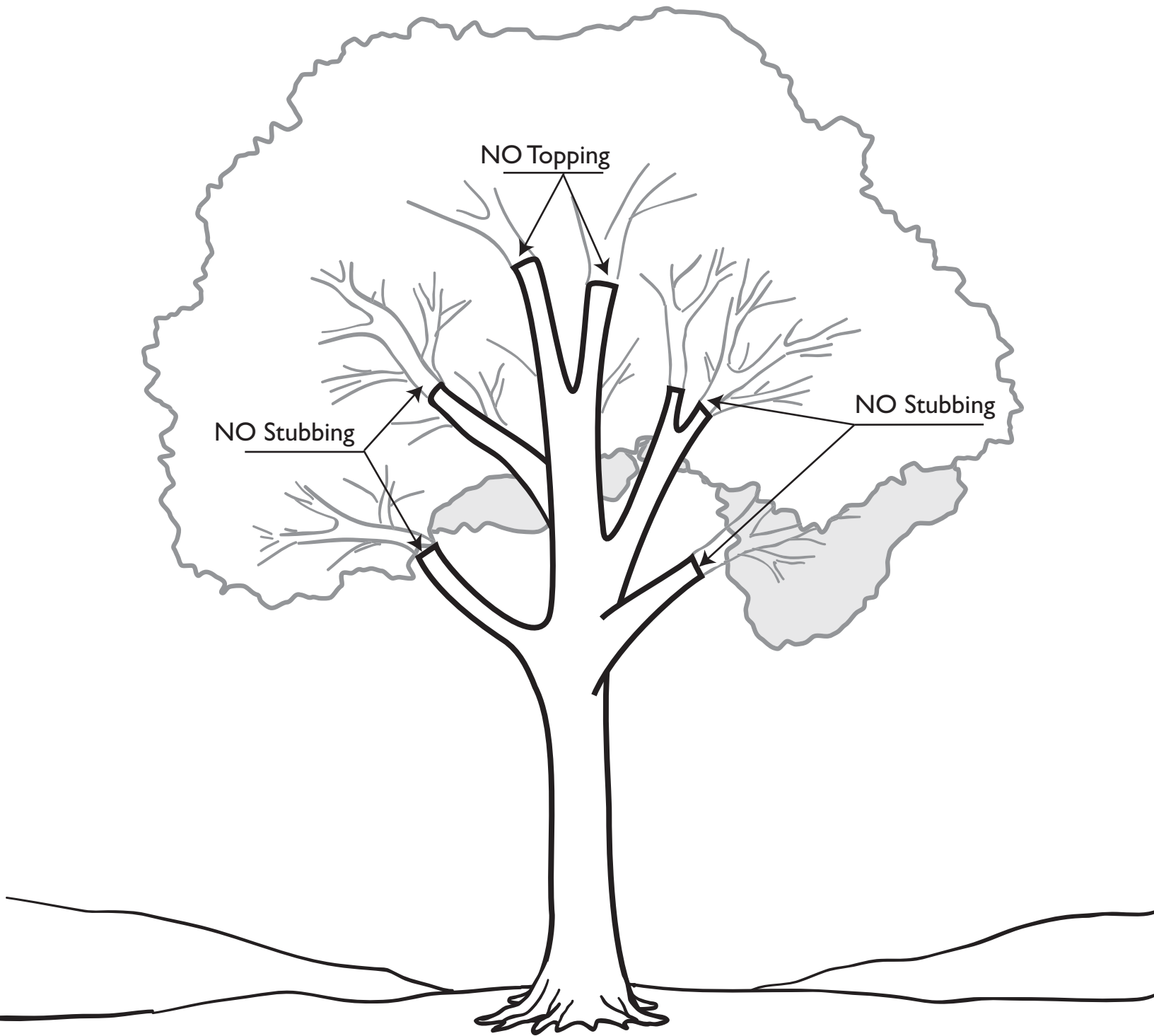
VII MAINTENANCE SPECIFICATIONS FOR PRUNING

A. GENERAL REQUIREMENTS FOR PROPERTY OWNERS / PRIVATE CONTRACTORS

1. *Harming trees*: Do not cut back trees so that their health will be impaired, except in emergency cases when there is an immediate danger to persons or property. Report such emergency procedures promptly to the Tree Warden with plans for completion. Follow up work must be submitted for his or her approval.
2. *Tree Pruning Crimes*: Do not top or stub trees. These practices impair the health and beauty of the tree. (See Figure 7, Facing Page 14.)
3. *Where to cut branches*: Do not make excessively deep cuts flush with the trunk that produce large wounds or weaken the tree. Make all final tree-pruning cuts to favor the earliest possible covering of the wound by natural callous growth. Make cuts just outside the branch collar. (See Figure 8, facing Page 16.)
4. *Sharp tools*. Keep all cutting tools and saws sharpened adequately so that final cuts will be smooth, with adjacent bark secure.
5. *Disinfection*: Properly disinfect all tools used on an infectious disease tree immediately after completing work on such tree. Rubbing alcohol is one such disinfectant.
6. *Avoid bark wounds*: When pruning branches too large to hold securely in one hand during the

Figure 7

TREE PRUNING CRIMES



cutting, first undercut, then cut off the branch one to two feet beyond the intended final cut, so that tearing back of the bark and wood will be prevented when making the final cut. (See Figure 8, facing Page 16 and Figure 9, following Figure 8.) When repairing bark wounds, remove only damaged or loose bark, and disturb a minimal amount of live tissue.

7. *Avoid root wounds*: When cutting roots of trees to be protected, use sharp clean tools to prevent entry of decay organisms.
8. *Trunk wound dressing*: Do not use wound dressings or tree paints to cover trunk wounds unless prescribed for a specific disease.
9. *Spikes*: Never use climbing spurs or spike shoes while pruning.
10. *Anchor*s: Do not use public trees or utility poles as anchors for winching in the process of removing other trees. Do not use trees to support utility poles.
11. *Safe work area*: Clean up branches, logs and other debris resulting from tree pruning or tree removal promptly. Keep the work area safe at all times.
12. *Partially completed work*: Never leave severed or partially cut branches in trees. When removing a tree, never cut tree roots and leave a tree standing having little or no support.
13. *Lower with ropes*: Whenever large tree sections are being cut in the treetop that may endanger persons or property, secure such sections by ropes and lower them safely in a controlled manner.
14. *Groundperson*: Assign at least one responsible tree worker to coordinate safe operations on the ground at all times while the pruning or removal of trees is in progress, unless the tree work area is totally barricaded or otherwise kept safe.

B. ADDITIONAL REQUIREMENTS FOR PROFESSIONALS

The following requirements for utility linesmen, highway departments, and the Town of Lexington or its contractors are in addition to all general requirements above.

1. *Standards*: Perform all work in accordance with the latest publication of the American National Standards Institute (as of 2009, this is ANSI-300: Tree, Shrub & Other Woody Plant Maintenance Standard Practices, published 2001).
2. *Large branches*: Authority to prune street and public trees does not include the cutting back of sound, healthy tree branches in excess of six inches in diameter unless specifically described and written into the permit form by the Tree Warden or if required by accepted arboricultural standards in the course of utility line clearance work and approved by the Tree Warden.
3. *Stump removal*: When removing public trees, cut the remaining stumps to six to eight inches below ground level unless the Tree Warden grants special exemption.
4. *Excavation finishing*: Promptly fill excavations resulting from tree removal to normal ground

level with clean earth, properly compacted and cleared of debris. Fine grade and plant grass seed unless otherwise directed by the Tree Warden.

C. AUTHORIZED TYPES OF TREE PRUNING

1. Pruning and Removal: The two cardinal rules of good pruning are (1) to use sharp tools and (2) to stand back and inspect the overall form between pruning cuts. (See Figure 7, Facing Page 14.)
2. Minimum or Safety Pruning Near Public Ways: Safety pruning consists of the minimum actions necessary to correct one or more conditions within a tree that may be hazardous to persons or property.
 - a. Clearing public passage requires pruning trees in such a manner as to prevent branch and foliage interference with safe public passage. Maintain clearance at a minimum of 14 feet above the paved surface of the street.
 - b. Prune to remove all dead, dying, broken or loose branches of two inches or greater in diameter.
 - c. Reduce weight by cutting back ends of branches only where an excessive burden appears likely to result in breakage of supporting limbs. Do not cut back any live, healthy branches in excess of six inches in diameter.
 - d. Cut back the ends of branches and foliage that are blocking the view of traffic control devices or signage, or are obstructing safe passage on a public sidewalk or street.

VIII TREE PROTECTION DURING CONSTRUCTION

A. GENERAL GOAL OF SAVING LIVING TREES

Keep in mind that not only the construction project's neighbors, but also the larger community is keenly aware of the value of mature trees in their environment. Trees and especially mature trees have aesthetic appeal, contribute to the distinct character of their neighborhood, improve air quality, provide glare and heat protection, reduce noise, aid in soil stabilization, provide natural flood control, create habitats for wildlife, provide natural privacy to neighbors and enhance their property values. For specific legal requirements, refer to the Tree Bylaw, Appendix I, Page 23. To achieve the goal of saving living trees, do the following in your design development:

1. *Retain a registered surveyor*: The surveyor must show on the base plan all trees of six inch DBH or greater, and the Setback Area. (See Figure 10, following Figure 9.)
2. *Design to save specimen trees*: Identify fine specimen trees, especially those six inches or larger in diameter, and design the site plan to preserve them, using them as distinctive focus or framing features to enhance the plan and buildings, taking care to allow enough space around them to

Figure 8

WHERE TO CUT BRANCHES

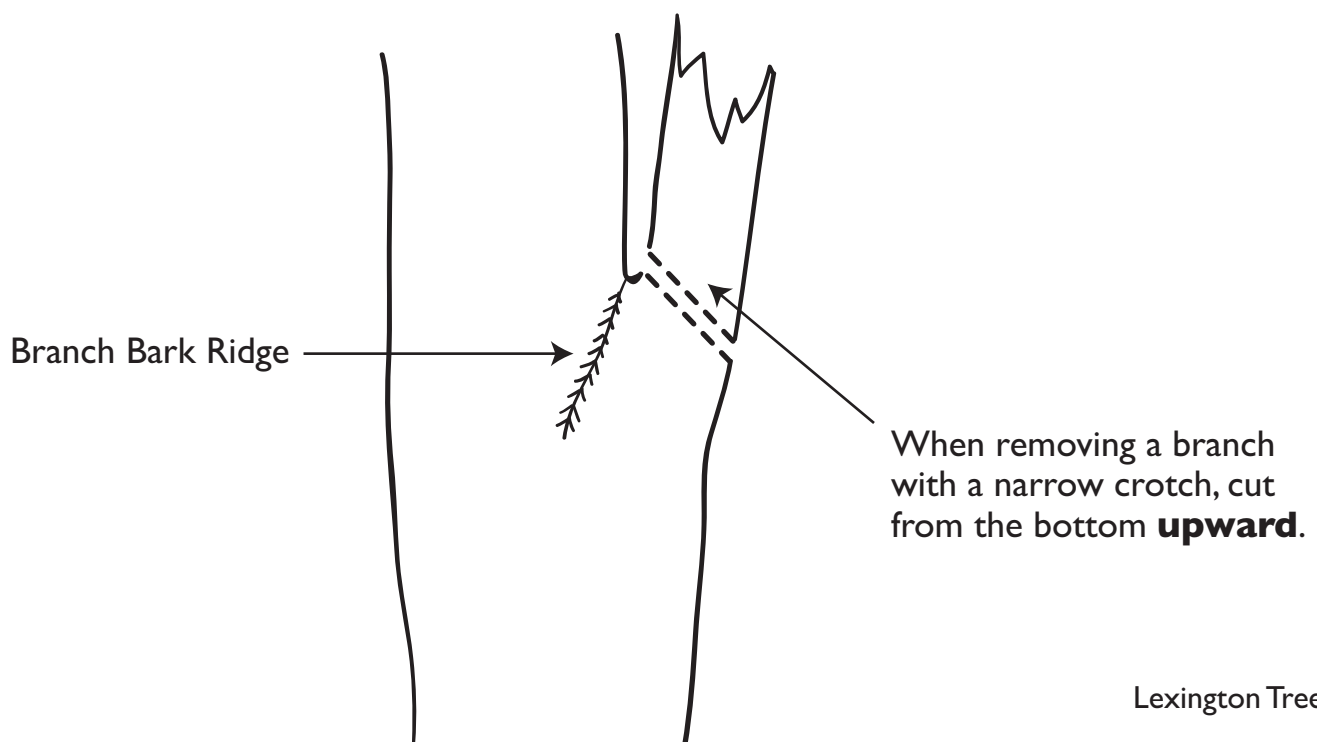
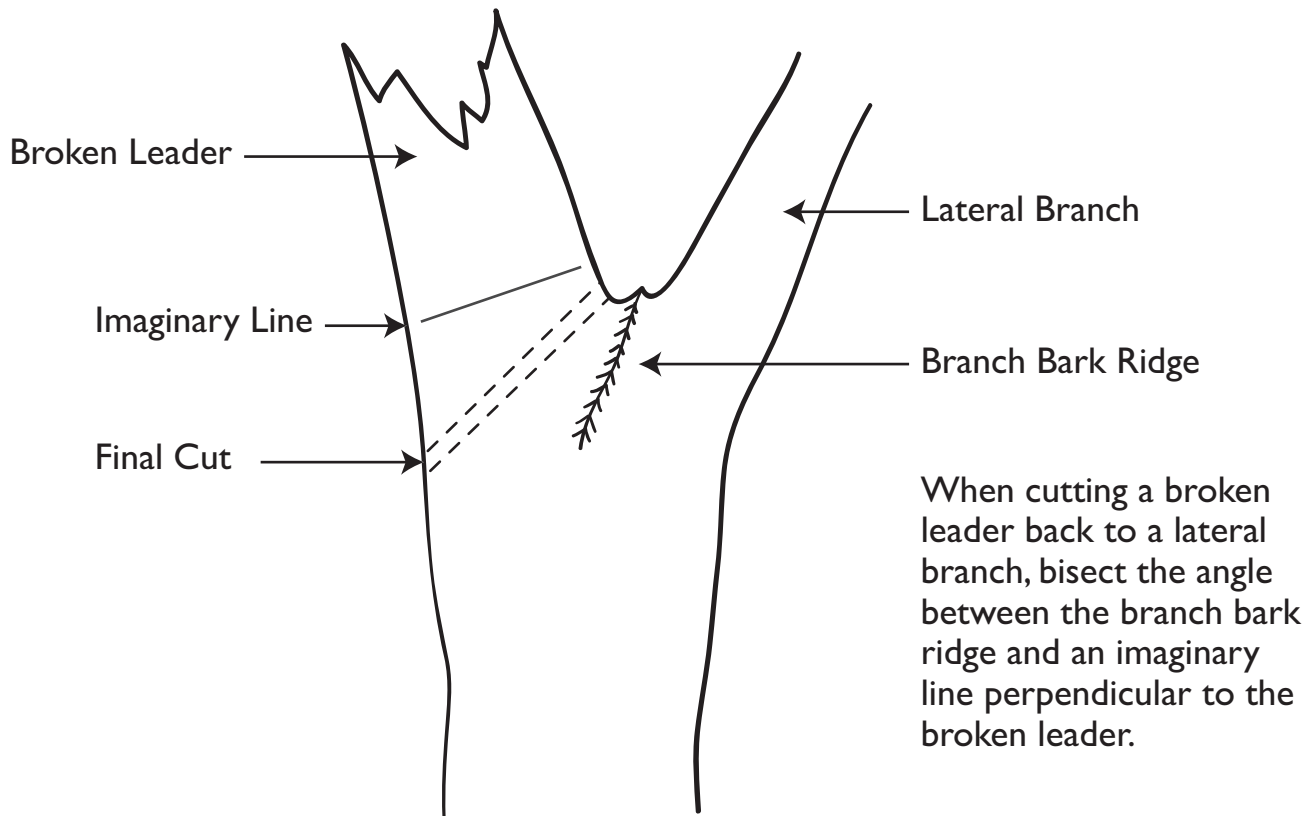
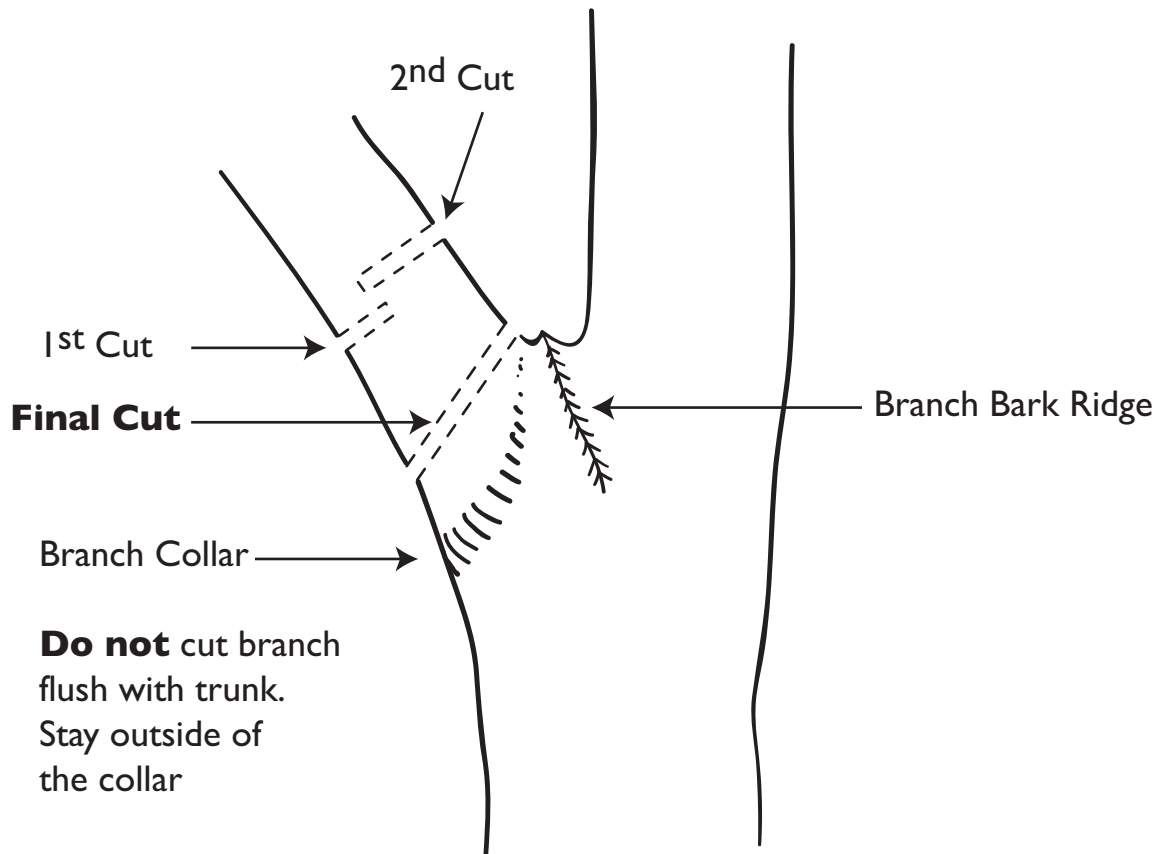


Figure 9

AVOID BARK WOUNDS



Removing a large lateral branch requires two preliminary cuts before the final cut.

The first two cuts prevent bark peeling off the trunk.

Figure 10

TREE BYLAW SETBACK AREA

The Tree Bylaw Setback Area for Protected Trees is to be 30 feet from the front of the property (usually the asphalt edge of the road) and 15 feet from the property lines on the two sides and the rear of the property.

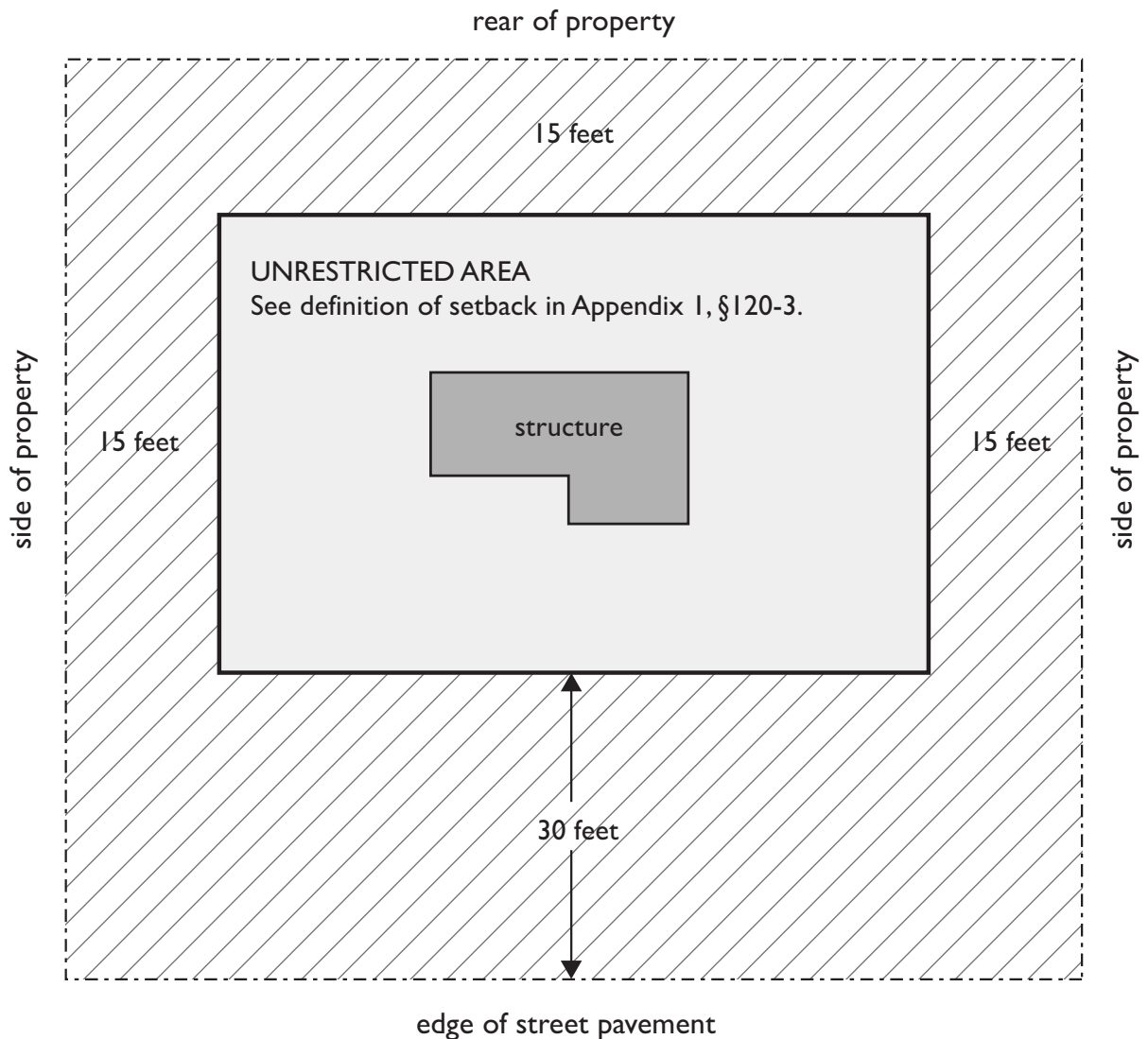
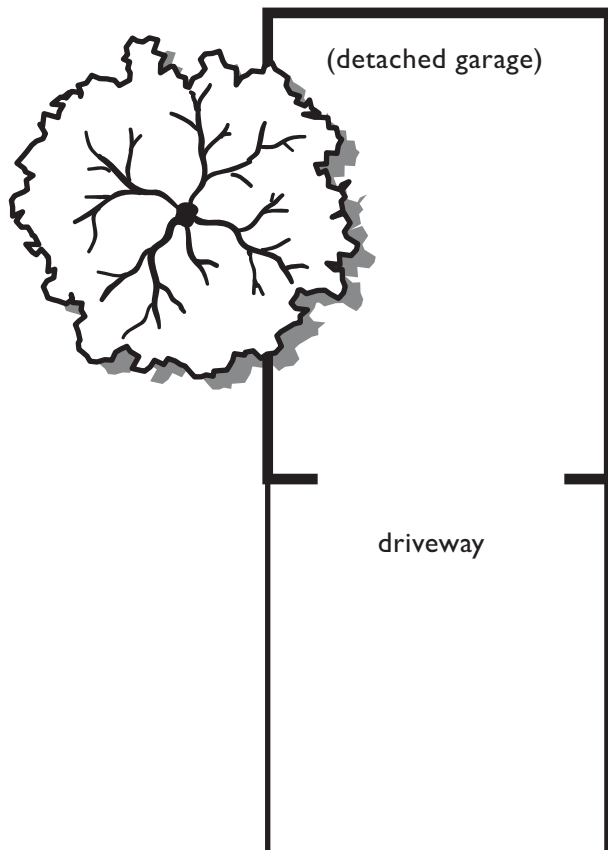


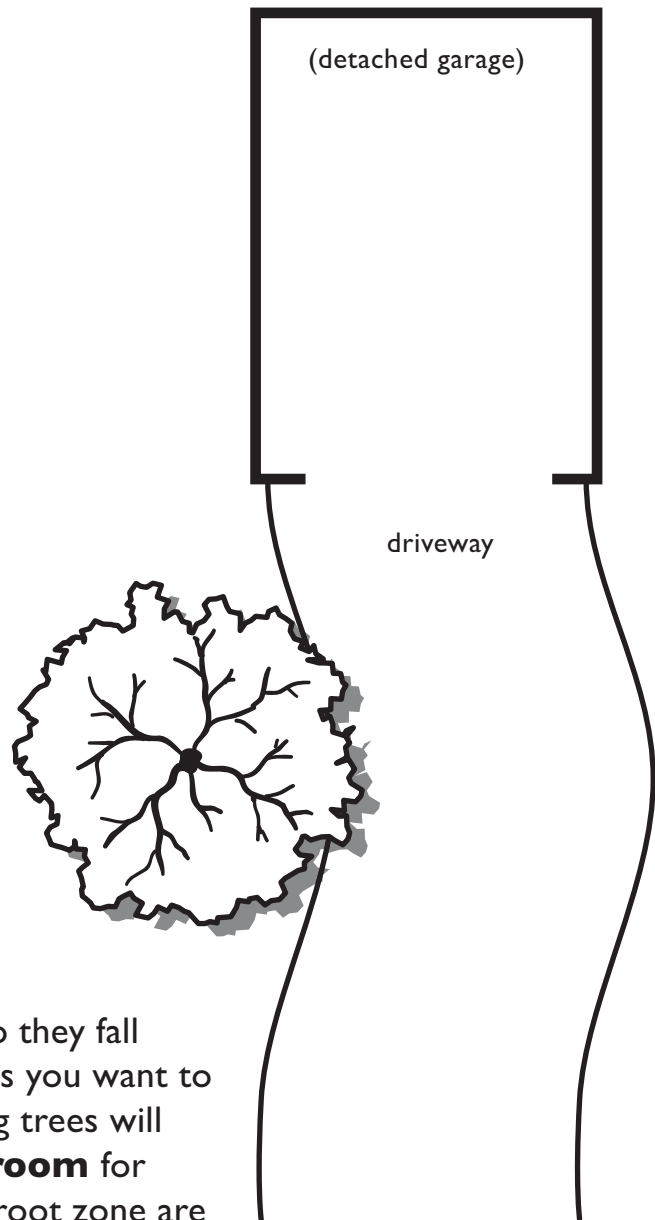
Figure 11

DESIGN TO SAVE SPECIMEN TREES

WRONG



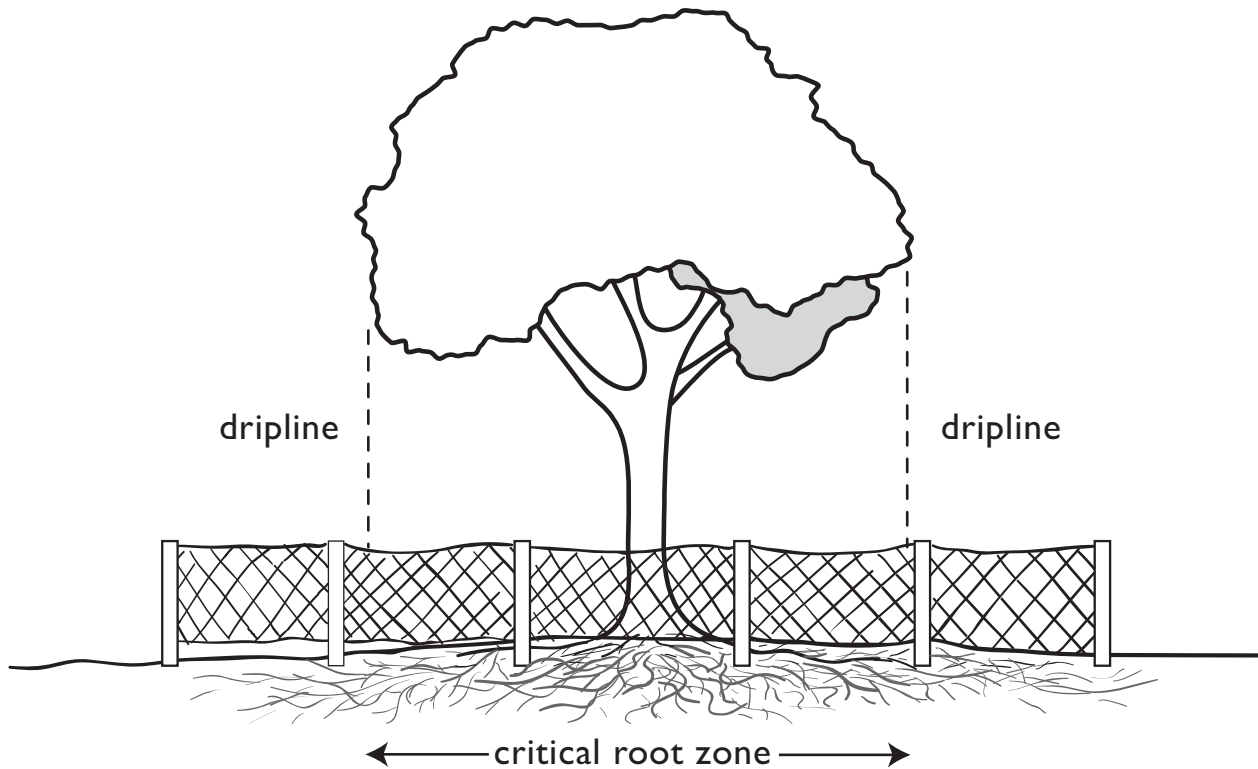
RIGHT



Locate buildings and other elements so they fall **outside** the root zone of special trees you want to save. Take into account the **size** young trees will reach at maturity and allow adequate **room** for development. If structures within the root zone are unavoidable, use pillars and posts instead of footers and walls to minimize damage to tree roots.

Figure 12

PROTECTING TREES DURING CONSTRUCTION



AVOID SOIL COMPACTION

The key to tree survival in the years following construction is **protection** of the roots during construction. Root compaction caused by the weight of stored materials, vehicles and foot traffic cuts off air and water passages in the soil that trees depend upon for good health. Damage from compaction shows up slowly, sometimes years later. The safest and surest way to avoid compaction is to build a protective fence around the tree to keep damaging vehicles and materials away from the root zone.

AVOID BREAKS AND SCRAPES

Special care with backhoes and other machinery is required to minimize damage to trunk, limbs and overhead branches. If work near a tree is required, wrap the trunk with protective material, such as 2x4s tied with rope or wire. Repair accidental damage immediately.

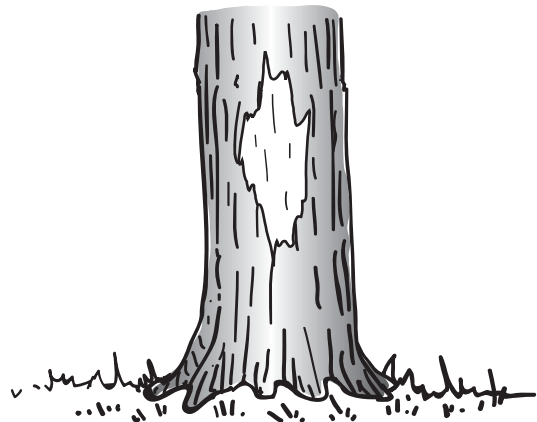
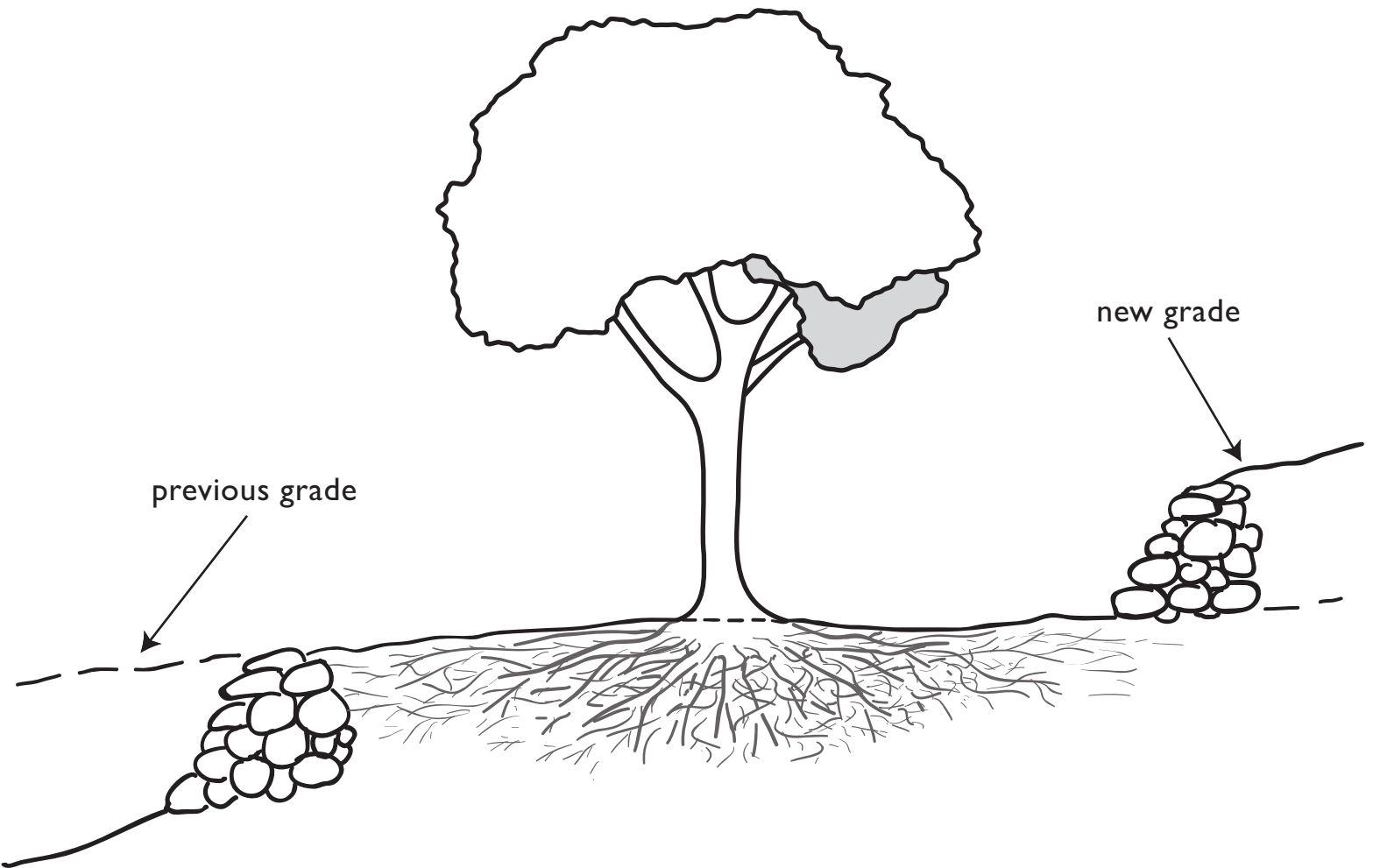


Figure 13

GRADE CHANGE GUIDELINES

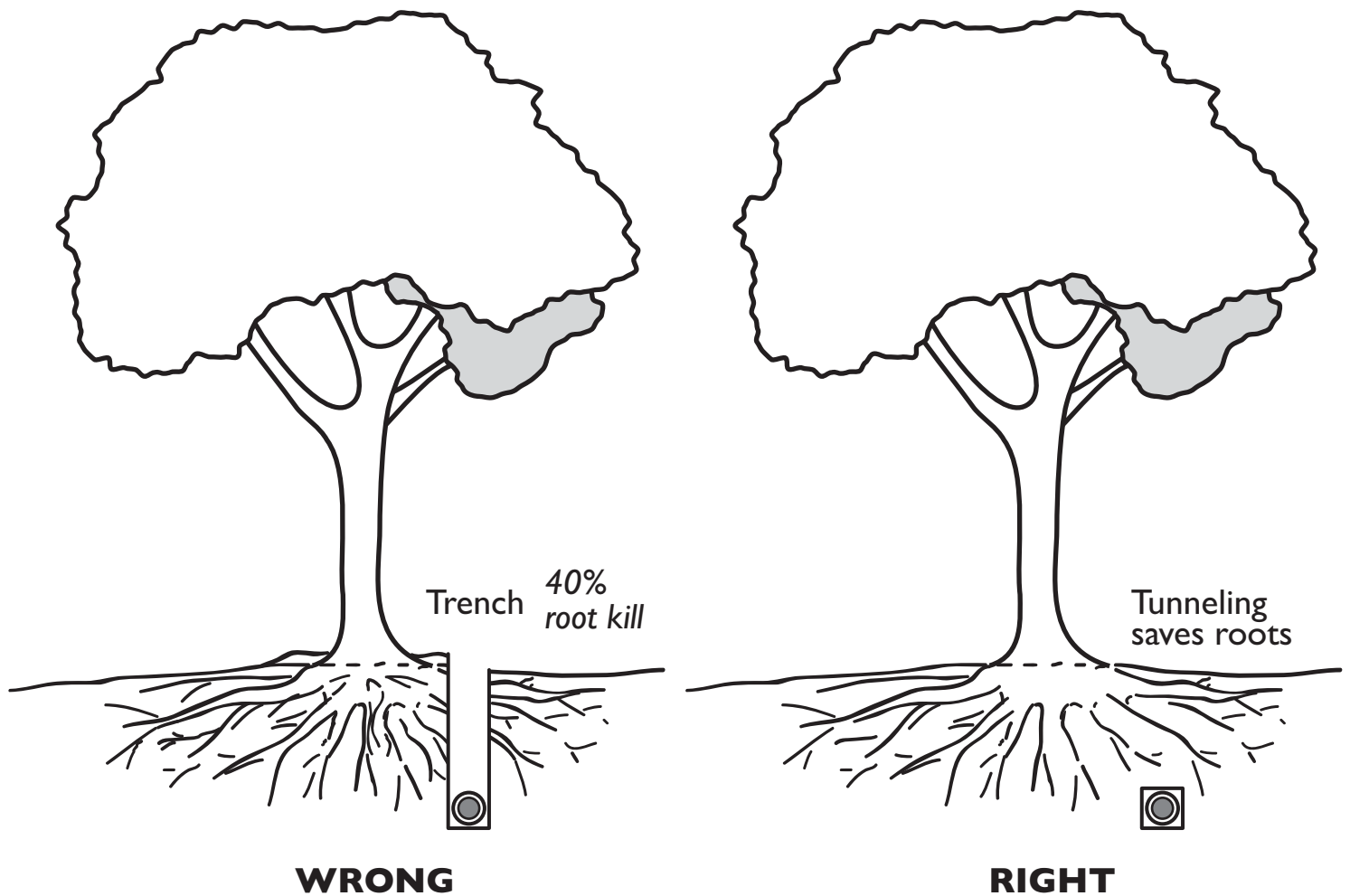


MAINTAIN EXISTING GRADE AROUND TREE

Protect tree roots by creating terraces with retaining walls. This will allow the original grade around the root zone to be maintained. Cutting or shaving roots or piling soil on top of roots to create a continuous new grade will slowly kill the tree. Look out for drainage changes that could mean a tree gets too much water or not enough.

Figure 14

TUNNELING UNDER ROOT ZONE



AVOID SEVERING ROOTS

Route utility lines *around* tree roots or tunnel *under* the root zone. Trenching kills all the roots outside the trench line. Posts and pillars can be substituted for footers and walls where foundations conflict with tree roots.

ensure their survival. (See Figure 11, following Figure 10.)

3. *Remove unsafe trees:* Identify trees that are terminally diseased, damaged beyond repair or in danger of falling and remove them early in the development process in order to save the developer money and to create a safer building site for construction workers.
4. *Transplant when possible:* Identify handsome trees in the way of construction that can be transplanted on site, and incorporate these into the site design.
5. *Submit plan to the Tree Warden:* Once a plan is developed submit it to the Lexington Tree Warden for review. Discuss and come to an agreement as to which trees are to be preserved, transplanted, protected or removed.
6. *Prune only as necessary:* Carefully prune the trees to be saved only as needed to remove broken branches, to enhance their natural form and to fit with the proposed buildings. Remember that trees need as much foliage as possible to help them survive through the stress of the construction. Follow pruning procedures outlined by the National Arborist Association and the Lexington Tree Manual.

B. PROTECTION REQUIREMENTS

1. *Barrier protection:* Before demolition and land clearing begin, protect all trees to be saved with barriers at the critical root zone (the outer edge of the area under the leaf canopy). This may be modified to a location agreed during on-site visit of the Tree Warden and/or a Tree Committee representative. Construct barriers of sturdy posts and highly visible plastic mesh or other approved durable fencing. This protection is to prohibit heavy equipment from compacting soil, damaging roots, breaking branches and scarring the trunk. (See Figure 12, following Figure 11.)
2. *Grade change guidelines:* Do not lower the grade or add fill within these critical root zone barriers. (See Figures 13 and 14, following Figure 12.)
3. *Weights under tree (NO PARKING!):* Do not park vehicles or equipment, or stockpile earth fill or other materials under trees or within the tree barriers.
4. *Chemical damage:* Do not dump debris, cement, asphalt, petroleum products, herbicides or other chemicals within the tree barriers.
5. *Leaf mulch:* Leave all fallen leaves from the trees within the barriers to remain on the ground as mulch. Do not rake up.
6. *Flooding:* Allow no impoundment of water over the roots of protected trees for over a day or two.
7. *Fasteners:* Allow absolutely no nails, screw eyes and other fastening devices on the trees. Use separate posts for signs, fences, electrical wires, pulley stays, etc.
8. *Fires:* Allow no fires within 100 yards of the critical root zone.

9. *Debris burial*: Bury no debris within 100 feet of the critical root zone.
10. *Utility Lines*: Locate all new underground utility lines outside and around the critical root zone of trees to be saved.
11. *Watering*: During dry spells in the growing season, water thoroughly all protected trees at least once a week so that the water penetrates 12 to 18 inches into the soil.
12. *Building within critical root zone*: If it is decided that a building, road, walk, utility or other feature must be built within part of this area, it may still be possible to save the tree. However, extra care must be given to the tree:
 - a. Use hand tools instead of machines;
 - b. Fertilize and water the tree in monitored amounts;
 - c. Tunnel instead of trench for utilities through tree root zones (see Figure 14, following Figure 13);
 - d. Carefully construct dry stone retaining walls to allow the original grade in the root zone to be maintained (see Figure 13, following Figure 12).

IX INVASIVE SPECIES — IMPACT ON PUBLIC LANDS

- A. Lexington's public lands are filled with aggressive invaders. Several minimally managed areas, such as the woods along Worthen Road, Bowman Park at Pleasant and Watertown Streets, Willard's Woods, the margins of the Jack Eddison Memorial Bikeway and the edges of the Great Meadow, are host to an overabundance of Norway Maple (*Acer platanoides*), Buckthorns (*Rhamnus cathartica* and *Frangula alnus*), Multiflora Rose (*Rosa multiflora*), Oriental Bittersweet (*Celastris orbiculatus*), Japanese Knotweed (*Polygonatum cuspidatum*), Asian Honeysuckles (*Lonicera mackii*, *L. tatarica*, *L. morrowii*, *L. japonicum*, or *L. x bellum*), Barberry (*Berberis* spp.), Burning Bush (*Euonymus alata*), Garlic Mustard (*Alliaria petiolata*), Purple Loosestrife (*Lythrum salicaria*), Black Swallowwort (*Cynanchum louiseae*) and other exotics.
- B. The Commonwealth of Massachusetts has passed legislation that bans the import, sale, or propagation of 140 species of exotic plants. You can find the whole list at the following URL (correct as of 2009), www.mass.gov/agr/farmproducts/proposed_prohibited_plant_list_v12-12-05.htm. Many of the plants are weeds that one would not deliberately plant anyway, but there are also many commonly used landscape plants that are no longer permitted to be sold, traded, purchased or distributed as of January 1, 2009.
- C. Please note and AVOID planting or transplanting any of these trees or shrubs mentioned above in paragraph 1, as well as the following additional: Norway Maple's dark-leafed varieties such

as ‘Crimson King’, Sycamore-leafed Maple (*Acer pseudoplatanus*), Porcelain Berry (*Ampelopsis brevipedunculata*), Autumn Olive (*Eleagnus umbellata*), Border Privet (*Ligustrum obtusifolium*), Amur Cork-tree (*Phellodendron amurense*), or Black Locust (*Robinia pseudoacacia*).

- D. A native plant species in North America is usually defined as one that was present before the arrival of European colonists. These plants shared the environment harmoniously, each with checks and balances to their growth that prevented one species from overwhelming others, and provided a bio-diverse environment supportive of other plants and animals.
- E. A non-native, exotic species may become invasive depending on where it is, and the number of specimens present in an area. A particular plant species might be invasive in one state and not in another, and a single specimen of a non-native plant escaping to a roadside might not be troublesome at all. For instance, Autumn Olive (*Eleagnus umbellata*) is invasive in Rhode Island, and is not yet invasive in Lexington, but if multiple specimens appear at one site, crowding out other growth, it would be considered invasive.
- F. The pervasive development of land in the last 400 years in New England by agriculture, industry, and the building of roads, parking lots, and buildings has greatly changed the physical structure of much of the landscape. In its disturbed state, the environment is less able to resist certain aggressively growing non-native plants, which may for botanical reasons be able to overwhelm local species.
- G. When a non-native tree such as the Norway Maple (*Acer platanoides*) is planted on a private property, typically the homeowners mow around it, pull up its seedlings, and take care of the property. In that spot, it is not a problem. However, the great quantities of seed it produces blow around the neighborhood and take root in minimally managed areas – fencerows, hedges, roadsides, property lines, railroad beds, and woodlands. This maple’s rapid growth rate, shallow water-gulping root system, very dense canopy and longer growing season soon shade out anything else growing nearby, reducing the numbers of indigenous plants available to supply food to native animal life.
- H. The dangers of unchecked non-native plant invaders, besides the possibility of extinction of plant or animal native species, also include the diminishment of ecosystem functions of importance to humans, such as water filtration, wood production, and recreation, as well as the mounting economic cost of control efforts.
- I. Lexington citizens can be responsible by learning more about invasive species, by eliminating them from their own land so they don’t spread to public property, and by replanting native or non-invasive species.

X SOURCE MATERIAL

PRINTED PUBLICATIONS:

American Standard for Nursery Stock, American Nursery and Landscape Association, May 2004.

ANSI-300: Tree, Shrub & Other Woody Plant Maintenance Standard Practices, American National Standards Institute, 2001.

Bringing Nature Home, How Native Plants Sustain Wildlife in Our Gardens, Douglas W. Tallamy, Timber Press, 2008

Creating the Urban Forest the Bare Root Method, Nina Bassuk, pamphlet, Urban Horticulture Institute, Cornell University, 1998.

Cultural Practice Problems of Trees and Shrubs in the Landscape and Nursery, Robert D. Childs, Deborah C. Swanson and Dr. Ronald F. Kujawski, University of Massachusetts Extension Service, December 2002.

Invaders: We're Fighting Back, (Vol. 10 #3, 2006), Conservation Notes of NEWFS, New England Wild Flower Society.

Manual of Woody Landscape Plants: Their Identification, Ornamental Characteristics, Culture, Propagation and Uses, Michael A. Dirr, Stipes Publishing Co., rev. 1998.

Modern Arboriculture: A Systems Approach to the Care of Trees and Their Associates, Alex L. Shigo, Shigo & Trees Assoc, 1991.

Native Plants of the Northeast, A Guide for Gardening & Conservation, Donald J. Leopold, Timber Press, 2005

Native Trees, Shrubs & Vines: A Guide to Using, Growing and Propagating North American Woody Plants, William Cullina, Houghton Mifflin, 2002

Principles and Practice of Planting Trees and Shrubs, Gary W. Watson and E. B. Himelick, International Society of Arboriculture, 1997.

The Tree: A Natural History of What Trees Are, How They Live, and Why They Matter, Colin Tudge, Three Rivers Press, 2006.

Trees and Development: a Technical Guide to Preservation of Trees during Land Development, Nelda Matheny and James R. Clark, International Society of Arboriculture, 1998.

Trees and Shrubs of New England, Marilyn Dwelley, Down East Books, 2nd ed., 2000.

Trees in the Urban Landscape: Site Assessment, Design, and Installation, Peter Trowbridge and Nina L. Bassuk, John Wiley & Sons Inc., 2004.

Trees in Urban Design, Henry F. Arnold, 2nd ed., Van Nostrand Reinhold, 1992.

WEBSITES:

Arnold Arboretum of Harvard University: <http://www.arboretum.harvard.edu/>

Department of Conservation and Recreation: www.mass.gov/dcr

Invasive Plant Atlas of New England: <http://invasives.eeb.uconn.edu/ipane>

Eastern Native Tree Society: <http://www.uark.edu/misc/ents/>

Massachusetts Horticultural Society: <http://www.masshort.org/>

New England Wildflower Society: <http://www.newfs.org/>

Ohio State Plant Dictionary: <http://plantfacts.osu.edu/images.lasso>

Planting Trees in Designed and Built Community Landscapes, pamphlet and on-line checklist, at
www.na.fs.fed.us/spfo/pubs/uf/plant_trees/planting_trees.htm

Town of Lexington: www.lexingtonma.gov/

Tree Committee, Town of Lexington: www.lexingtonma.gov/committees/tree.cfm

University of Massachusetts Extension: www.umassextension.org/

XI PUBLICATION INFORMATION

Second Edition, Published 2009 by the Town of Lexington Tree Committee:

John Frey, Chairman*

Jeanne Krieger, Selectman Liaison

Jewel Kuljian*

Karen Longeteig*

Gerald Paul

David Pinsonneault, Tree Warden

Anne Senning*

Susan Solomon, Associate

Nell Walker*

Jim Wood

*Editors of the Tree Management Manual, Second Edition 2009

APPENDIX I. TREE BYLAW, TOWN OF LEXINGTON

CHAPTER 120 TREES

[History: Adopted by the Annual Town Meeting of the Town of Lexington 4-11-2001 by Art. 34. Amendments noted where applicable.]

§ 120-1. Preamble.

The Town of Lexington finds that mature trees have aesthetic appeal, contribute to the distinct character of certain neighborhoods, improve air quality, provide glare and heat protection, reduce noise, aid in the stabilization of soil, provide natural flood and climate control, create habitats for wildlife, enhance property values and provide natural privacy to neighbors.

§ 120-2. Intent and Purpose.

This bylaw is enacted for the purpose of preserving and protecting both Public Shade Trees pursuant to General Law Chapter 87 and certain trees on portions of private property. To achieve these purposes, this bylaw establishes a Tree Committee and empowers the Committee, in conjunction with the Tree Warden, to regulate the removal and replacement of trees in certain circumstances, and to promote the planting and protection of trees throughout the Town. It is desirable that the Town plant more trees than are removed to compensate for tree losses and the length of time to maturity. The provisions of this bylaw, when pertaining to private property, apply only when there is major construction or demolition as defined below and only within set-back areas.

§ 120-3. Definitions.

A. When used in this bylaw, the following definitions shall apply:

CALIPER — Diameter of a tree trunk (in inches) measured six inches above the ground for trees up to an including four-inch diameter, and 12 inches above the ground for larger trees.

DBH ("Diameter at Breast Height") — The diameter (in inches) of the trunk of a tree (or, for multiple trunk trees, the aggregate diameters of the multiple trunks) measured 4½ feet from the existing grade at the base of the tree.

DEMOLITION — Any act of pulling down, destroying, removing or razing a building or commencing the work of total or substantial destruction with the intent of completing the same.

MAJOR CONSTRUCTION — Any construction of a structure on a vacant lot, or any construction of one or multiple structures or additions to structures on an existing lot, wherein there would result an increase of 50% or more in the total footprint of the new structure(s), when compared to the total footprint of the pre-existing structure(s).

PERSON — Any person, firm, partnership, association, corporation, company or organization of any kind including public or private utility and municipal department.

PROTECTED TREE — [Amended 4-4-2007 ATM by Art. 13.] Any tree on private land, with a DBH of six inches or greater (or any multiple trunk tree with a DBH of 12 inches or greater), located in the setback area (or which, as determined by the Tree Warden, has any portion of the stem between six inches and 4½ feet above grade actively growing into the setback area,) provided that tree is not hazardous or undesirable as defined in the Tree Manual.

PUBLIC SHADE TREE — Any tree within the public right-of-way except for state highways that, as determined by the Tree Warden, has any portion of the stem between six inches and 4 ½ feet above grade actively growing into the public right-of-way.

SETBACK AREA — The minimum setback area around a lot shall be measured 30 feet from the front and 15 feet from the two sides and from the rear of the lot. For the purposes of establishing the setback area in which the provisions of this bylaw shall apply, the measurement shall be from any point on any property line of the lot, to points along an imaginary line drawn representing the minimum set-back requirement.

TOWN TREE — Any tree within a public park or open space under the jurisdiction of the Selectmen acting as park commissioners, on public school grounds, or on any other Town-owned land.

TREE REMOVAL — Any act that will cause a tree to die within a three-year period.

- B. The Tree Committee may provide other such definitions or terms in rules and regulations, approved by the Selectmen, deemed useful to implement this bylaw.

§ 120-4. Applicability.

- A. Applicability. The circumstances under which the tree protection, removal and replacement regulatory process delineated in this bylaw shall apply are as follows:
- (1) Proposed cutting (trunk, limbs or roots) of existing public shade trees on public and private ways (accepted or unaccepted streets) or of Town trees on Town-owned (or leased land being used as a public facility) by any person
 - (2) Proposed demolition of an existing residential or nonresidential structure
 - (3) Proposed major construction on an existing residential or nonresidential lot.
- B. Non-Applicability. This bylaw shall not apply in any instance where the Planning Board, the Zoning Board of Appeals or the Conservation Commission has established jurisdiction, including but not limited to the following:
- (1) The Planning Board regulates the planting, retention and/or replacement of public shade trees, by means of the Board's authority over subdivision of land and/or the administration of unaccepted Streets under Chapter 175, parts 1-3 (formerly Chapter 5), of the Planning Board's Development Regulations;
 - (2) The Planning Board regulates planting, retention and/or replacement of on-lot trees on private residential land, where said property is subject to a special permit under the Zoning Bylaw, or issues recommendations emanating from a preliminary site development and use plan review;
 - (3) The Zoning Board of Appeals regulates planting, retention and/or replacement of on-lot trees on private nonresidential land, where said property is subject to a special permit under the Zoning Bylaw;
 - (4) The Conservation Commission regulates the retention and/or replacement of on-lot trees, by means of administering the Wetlands Protection Act (Chapter 131 and 310 CMR) within jurisdictional areas of the property.

§ 120-5. Tree Warden.

The Public Grounds Superintendent within the Department of Public Works shall serve as the Tree Warden unless another designee is appointed by the Selectmen.

- A. The duties or responsibilities of the Tree Warden shall conform to General Law Chapter 87 and shall include, but not be limited to, the following as may be further specified in this bylaw:
 - (1) Management of all trees within public right-of-way and adjacent to public buildings and commons; care and control of trees on Town property if so requested by the Selectmen, and on Town land owned by other departments such as Schools, Recreation and Conservation, if so requested by the respective Department and approved by the Selectmen;
 - (2) Expending funds, in coordination with the Tree Committee, appropriated for planting trees on Town land under the jurisdiction of the Tree Warden;
 - (3) With recommendations from the Tree Committee, granting or denying and attaching reasonable conditions to all permits required under this bylaw;
 - (4) Work in conjunction with the Tree Committee to seek grants or other assistance concerning the preservation and maintenance of trees in Town;
 - (5) Development of rules, regulations, tree inventory, manuals and other data, in conjunction with the Tree Committee, to carry out the purposes and intent of this bylaw for approval and promulgation by the Selectmen;
 - (6) Enforcement of this bylaw;
 - (7) Appointment or removal of Deputy Tree Wardens.
- B. Moreover, the Selectmen may authorize the Tree Warden to undertake other responsibilities consistent with the purposes and intent of this bylaw.

§ 120-6. Tree Committee.

- A. The Town shall have a Tree Committee that consists of seven members as appointed by the Selectmen. For the first appointments, three members will serve one-year terms; two members will serve two-year terms; and two members shall serve three-year terms. All members up for renewal will then serve three-year terms.
- B. The Tree Committee shall have the following duties and responsibilities as may be further specified in this bylaw:
 - (1) Development of rules, regulations, tree inventory, manuals and other data, in conjunction with the Tree Warden, to carry out the purposes and intent of this bylaw, for approval and promulgation by the Selectmen;
 - (2) Permit the removal of certain trees on private property upon appeal, by an applicant;
 - (3) Public education and coordination with other Town Committees and civic groups to promote the purposes and intent of this bylaw;
 - (4) Work in conjunction with the Tree Warden to seek grants or other assistance concerning the preservation and maintenance of trees in Town.

§ 120-7. Public Shade Trees and Town Trees.

- A. Scope. A public shade tree or Town tree may not be cut, pruned, removed or damaged by any person or the Town until and unless the Tree Warden issues a written permit pursuant to this section.

- B. Procedures. Any person seeking to prune or remove a public shade tree or Town tree shall submit an application to the Tree Warden in accordance with any application requirements issued by the Tree Warden. The Tree Warden shall hold a public hearing on applications for removal, at the expense of the applicant, in accordance with the provisions outlined within General Law Chapter 87. The permit issued by the Tree Warden may specify schedules, terms, and conditions, including requiring the planting of replacement trees.
- C. Planting of trees on Public Land. Any person seeking to plant a tree on public land under the jurisdiction of the Tree Warden must obtain written permission from the Tree Warden. Such permission may specify schedules, terms, and conditions as deemed appropriate by the Tree Warden.

§ 120-8. Protected Trees.

- A. Scope. The removal of protected trees in conjunction with demolition or major construction is prohibited unless authorized by the Tree Warden, or Tree Committee as set forth below.
- B. Procedures. When major construction or demolition is planned, the owner of the property shall submit to the Building Commissioner as part of the application for a building or demolition permit a site plan drawn and stamped by a registered land surveyor showing all existing trees on the property of six-inch DBH or greater. [Amended 4-4-2007 ATM by Art. 13.]
 - (1) If any protected trees will be removed or damaged in connection with major construction or demolition, the owner of the property shall submit a proposal for tree removal and mitigation to the Building Commissioner with the application for building or demolition permit. Additionally, if any protected trees were removed during the 12 months preceding the application for the building or demolition permit, a tree removal and mitigation proposal regarding the protected trees already removed shall be submitted to the Building Commissioner. The proposal shall satisfy the mitigation requirements set forth below and any rules, regulations or manuals promulgated by the Selectmen. The Selectmen shall set an application fee. Such fee shall be at least five dollars (\$5.00) per DBH inch of protected tree to be removed. [Amended 3-19-2008 ATM by Art. 37.]
 - (2) The Building Commissioner shall refer the tree proposal to the Tree Warden. The Tree Warden shall conduct a site visit. If the applicant's proposal is consistent with the mitigation requirements herein and the rules, regulations or manuals issued by the Selectmen, the Tree Warden will issue a permit within 10 business days of receipt by the Tree Warden of the proposal to authorize the tree work. If the proposal does not meet or satisfy these requirements, the Tree Warden shall so notify the applicant and deny the permit.
 - (3) An applicant may appeal the denial or grant of a tree permit to the Tree Committee. The Tree Committee shall conduct a public hearing on the appeal and shall give the public notice thereof, at the expense of the applicant. Public notice shall include all persons owning land within 300 feet of any part of the applicant's land at least 14 days before said hearing. The Tree Committee shall rule within 20 days of the public hearing.
 - (4) Appeals of final decisions of the Tree Committee shall be to Superior Court and shall be limited to whether the decision was arbitrary or capricious.

- C. Mitigation. A protected tree shall not be removed unless at least one of the following provisions is satisfied:
- (1) Replanting of trees: such replanting shall be on the basis of 1/2 inch of caliper of new tree(s) for each inch of DBH of tree(s) removed, and each replanted tree must have a minimum caliper of three inches. The replanting shall occur no later than 12 months after completion of the construction work, either on applicant's land or on land abutting applicant's land with express approval of the owner of such abutting land;
 - (2) Contribution into the Lexington Tree Fund: such contribution shall be \$50 per DBH inch of protected tree removed not already mitigated as per Subsection C (1). [Amended 4-4-2005 ATM by Art. 16]
 - (3) The applicant demonstrates that the removal of a protected tree is desirable to enhance the landscaping on the lot, and that such removal does not negatively impact in an excessive manner on the character of the neighborhood or on the privacy enjoyed by abutters. The applicant demonstrates that the removal of a protected tree is desirable to enhance the landscaping on the lot, and that such removal does not negatively impact in an excessive manner on the character of the neighborhood or on the privacy enjoyed by abutters. [Amended 4-4-2007 ATM by Art. 13]
 - (4) [Added 4-4-2007 ATM by Art. 13] All evergreens planted as replacement trees must be a minimum of 6 feet in height and may include, without limitation, pine, hemlock, spruce and fir. Low-growing evergreens shall not be accepted as replacement trees.
- D. Trees Not Removed - [Added 4-4-2007 ATM by Art. 13] Trees that are to be left on the site must be protected as specified in the Tree Management Manual
- E. Failure to Protect Trees Not Removed - [Added 4-4-2007 ATM by Art. 13] Trees left on site must be protected; and if not done so as required by this bylaw the Tree Warden may impose the following:
- (1) The town may undertake tree protection measures and bill for any labor and material charges incurred.
 - (2) The town may require replacement plantings larger than three inches in diameter to replace trees damaged during construction.
 - (3) The town may hire an arborist whose charges will be billed to the owner/builder to ensure that trees left on the site will survive and remain healthy.
 - (4) The town may impose fines as per the fine schedule in §120-10 of this bylaw.

§ 120-9. Emergencies and Exemptions.

Provisions of this bylaw shall not apply to:

- A. Emergency projects necessary for public safety, health and welfare as determined by the Director of Public Works or the Town Manager;
- B. Trees that are hazardous as determined in writing by the Tree Warden;
- C. Invasive tree species as identified in the Tree Manual;
- D. Trees identified by the Commonwealth that pose a risk of disease or insect infestation.

§ 120-10. Enforcement.

- A. Any person violating this bylaw is subject to the penalties under Chapter 1, § 1-6 of the General Bylaws, General Law Chapter 87 (for violations concerning public shade trees) and other legal enforcement action by the Town. The Tree Warden is authorized to enforce the provisions of Chapter 1 of the General Bylaws and of General Law Chapter 87. Any other legal enforcement action shall be determined by the Selectmen in consultation with the Tree Committee, the Tree Warden and Town Counsel.
- B. Each instance in which a Town tree or a protected tree is removed without a tree permit shall constitute an offense under this bylaw. When Town trees or protected trees have been removed without a permit, mitigation (as outlined in § 120-8C of this bylaw) and the payment of fines (as outlined in the Fine Schedule at the end of this bylaw) shall be required. [Amended 3-31-2004 ATM by Art. 34]
- C. If mitigation and the payment of fines are completed in due time as determined by the Tree Warden, the project will be approved. If not completed, then each day beyond the determined and agreed upon completion date shall constitute a new and separate offense. [Amended 3-31-2004 ATM by Art. 34]

§ 120-11. Rules and Regulations.

The Selectmen may promulgate, after public notice and hearing, rules and regulations to effectuate the purposes and intent of this bylaw. Failure by the Selectmen to promulgate such rules and regulations shall not act to suspend or invalidate the effect of this bylaw.

§ 120-12. Severability.

If any section, paragraph or part of this bylaw if for any reason declared invalid or unconstitutional by any court, every other section, paragraph and part shall continue in full force.

§ 120-13. Relationship to Other Bylaws.

Nothing in this bylaw shall be construed to restrict, amend, repeal, or otherwise limit the application or enforcement of existing Town of Lexington Bylaws or Commonwealth of Massachusetts laws.

§ 120-14. Funds. [Added 3-31-2004 ATM by Art. 34; amended 4-4-2005 ATM by Art. 16]

Collection of voluntary contributions under this bylaw shall be deposited into the Lexington Tree Fund, provided such fund is annually reauthorized, or otherwise to the surplus revenue of the Town. The Tree Warden, with input from the Tree Committee, will request use of these funds for tree planting, transplanting, and other tree-related needs. The request to expend these funds will be approved by the Board of Selectmen.

§ 120-15. Tree Management Manual. [Added 4-4-2007 ATM by Art. 13]

The Lexington Tree Management Manual will be used as the standard for tree planting, maintenance and protection in the Town.

FINES: [Pursuant to the Town's General Bylaws, Part I, Chapter 1, Article II, §9-1, Chapter 120 Trees:]

Fine Schedule:	1 st offense - \$50.00 per violation
	2 nd offense - \$100.00 per violation
	3 rd and subsequent offenses - \$200.00 per violation

APPENDIX II**CHAPTER 87. SHADE TREES**

MASSACHUSETTS GENERAL LAWS**PART I.
ADMINISTRATION OF THE GOVERNMENT**

**TITLE XIV.
PUBLIC WAYS AND WORKS**

Chapter 87: Section 1. Public shade trees; definition.

Section 1. All trees within a public way or on the boundaries thereof including trees planted in accordance with the provisions of section 7 shall be public shade trees; and when it appears in any proceeding in which the ownership of or rights in a tree are material to the issue, that, from length of time or otherwise, the boundaries of the highway cannot be made certain by records or monuments, and that for that reason it is doubtful whether the tree is within the highway, it shall be taken to be within the highway and to be public property until the contrary is shown.

Chapter 87: Section 2. Powers of tree wardens.

Section 2. The tree warden of a town may appoint and remove deputy tree wardens. He and they shall receive such compensation as the town determines or, in default thereof, as the selectmen allow. He shall have the care and control of all public shade trees, shrubs and growths in the town, except those within a state highway, and those in public parks or open places under the jurisdiction of the park commissioners, and shall have care and control of the latter, if so requested in writing by the park commissioners, and shall enforce all the provisions of law for the preservation of such trees, shrubs and growths. He shall expend all money appropriated for the setting out and maintenance of such trees, shrubs and growths, and no tree shall be planted within a public way without the approval of the tree warden, and in towns until a location therefor has been obtained from the selectmen or road commissioners. He may make regulations for the care and preservation of public shade trees and establish fines and forfeitures of not more than twenty dollars in any one case for violation thereof; which, when posted in one or more public places, and, in towns, when approved by the selectmen, shall have the effect of town bylaws.

Chapter 87: Section 3. Cutting of public shade trees; public hearing; damages to fee owner.

Section 3. Except as provided by section five, public shade trees shall not be cut, trimmed or removed, in whole or in part, by any person other than the tree warden or his deputy, even if he be the owner of the fee in the land on which such tree is situated, except upon a permit in writing from said tree warden, nor shall they be cut down or removed by the tree warden or his deputy or other person without a public hearing and said tree warden or his deputy shall cause a notice of the time and place of such hearing thereof, which shall identify the size, type and location of the shade tree or trees to be cut down or removed, to be posted in two or more public places in the town and upon the tree at least seven days before such hearing and published in a newspaper of general circulation in the city or town once in each of two successive weeks, the first publication to be not less than seven days before the day of the hearing or if no such local newspaper exists then in accordance with the provisions of section six of chapter four; provided, however, that when a public hearing must be held under the provisions of this section and under section fifteen C of chapter forty prior to the cutting or removal of a tree, such hearings shall be consolidated into a single public hearing before the tree warden and the planning board, or if there is no planning board, the selectmen of a town or the city council of a city, and notice of such consolidated public hearing shall be given by the tree warden or his deputy as provided herein. Any person injured in his property by the action of the officers in charge of the public shade trees as to the trimming, cutting, removal or retention

of any such tree, or as to the amount awarded to him for the same, may recover the damages, if any, which he has sustained, from the town under chapter seventy-nine.

Chapter 87: Section 4. Cutting down or removal of public shade trees, approval of selectmen or mayor.

Section 4. Tree wardens shall not cut down or remove or grant a permit for the cutting down or removal of a public shade tree if, at or before a public hearing as provided in the preceding section, objection in writing is made by one or more persons, unless such cutting or removal or permit to cut or remove is approved by the selectmen or by the mayor.

Chapter 87: Section 5. Cutting down, trimming or removing bushes and small trees.

Section 5. Tree wardens and their deputies, but no other person, may, without a hearing, trim, cut down or remove trees, less than one and one half inches in diameter one foot from the ground, and bushes, standing in public ways; and, if ordered by the mayor, selectmen, road commissioners or highway surveyor, shall trim or cut down trees and bushes, if the same shall be deemed to obstruct, endanger, hinder or incommode persons traveling thereon or to obstruct buildings being moved pursuant to the provisions of section eighteen of chapter eighty-five. Nothing contained in this chapter shall prevent the trimming, cutting or removal of any tree which endangers persons traveling on a highway, or the removal of any tree, if so ordered by the proper officers for the purpose of widening the highway and nothing herein contained shall interfere with the suppression of pests declared to be public nuisances by section eleven of chapter one hundred and thirty-two, including the Dutch elm disease.

Chapter 87: Section 6. Penalty for violation of secs. 3, 4 and 5.

Section 6. Violations of any provision of the three preceding sections shall be punished by forfeiture of not more than five hundred dollars to the use of the city or town.

Chapter 87: Section 7. Planting of shade trees.

Section 7. Cities and towns may appropriate money for the purpose of acquiring and planting shade trees in public ways. The tree warden, or a private organization acting with the written consent of the tree warden, may plant shade trees acquired with public or private funds in a public way, or if he deems it expedient, upon adjoining land at a distance not exceeding 20 feet from the layout of such public way for the purpose of improving, protecting, shading or ornamenting the same; provided, however, that the written consent of the owner of such adjoining land shall first be obtained.

Chapter 87: Section 8. Trees on state highways.

Section 8. The department of highways, in this chapter called the department, shall have the care and control of all trees, shrubs and growths within state highways, and may trim, cut or remove such trees, shrubs and growths, or license the trimming, cutting or removal thereof. No such tree, shrub or other growth shall be trimmed, cut or removed by any person other than an agent or employee of the department, even if he be the owner of the fee in the land on which such tree, shrub or growth is situated, except upon a permit in writing from the department. Any person injured in his property by the action of the department as to the trimming, cutting, removal or retention of any such tree, shrub or other growth, may recover the damages, if any, which he has sustained, from the commonwealth under chapter seventy-nine.

Chapter 87: Section 9. Signs or marks on shade trees.

Section 9. Whoever affixes to a tree in a public way or place a notice, sign, advertisement or other thing, whether in writing or otherwise, or cuts, paints or marks such tree, except for the purpose of protecting it or the public and under a written permit from the officer having the charge of such trees in a city or from the tree warden in a town, or from the department in the case of a state highway, shall be punished by a fine of not more than fifty dollars. Tree wardens shall enforce the provisions of this section; but if a tree warden fails to act in the case of a state highway within thirty days after the receipt by him of a complaint in writing from the department, the department may proceed to enforce this section.

Chapter 87: Section 10. Injury to trees on state highways.

Section 10. Whoever without authority trims, cuts down or removes a tree, shrub or growth, within a state highway or maliciously injures, defaces or destroys any such tree, shrub or growth shall be punished by imprisonment for not more than six months, or by a fine of not more than five hundred dollars to the use of the commonwealth.

Chapter 87: Section 11. Injury to trees of another person.

Section 11. Whoever wilfully, maliciously or wantonly cuts, destroys or injures a tree, shrub or growth which is not his own, standing for any useful purpose, shall be punished by imprisonment for not more than six months or by a fine of not more than five hundred dollars.

Chapter 87: Section 12. Injury to shrubs, trees or fixtures.

Section 12. Whoever wantonly injures, defaces or destroys a shrub, plant or tree, or fixture of ornament or utility, in a public way or place or in any public enclosure, or negligently or wilfully suffers an animal driven by or for him or belonging to him to injure, deface or destroy such shrub, plant, tree or fixture, shall be punished by a fine of not more than five hundred dollars, and shall in addition thereto be liable to the town or any person for all damages to its or his interest in said shrub, plant, tree or fixture caused by such act. Whoever by any other means negligently or wilfully injures, defaces or destroys such a shrub, plant, tree or fixture shall likewise be liable to the town or any person for all damages to its or his interest in said shrub, plant, tree or fixture caused by such act.

Chapter 87: Section 13. Powers and duties of tree wardens in cities.

Section 13. The powers and duties conferred and imposed upon tree wardens in towns by this chapter shall be exercised and performed in cities by the officers charged with the care of shade trees within the limits of the highway.

APPENDIX III

CHAPTER 40 SECTION 15 C. SCENIC ROADS

MASSACHUSETTS GENERAL LAWS

Section 15C. Designation and improvement of scenic roads.

Upon recommendation or request of the planning board, conservation commission or historical commission of any city or town, such city or town may designate any road in said city or town, other than a numbered route or state highway as a scenic road; provided, however, that a numbered route may be designated by a city or town as a scenic road if its entire length is contained within the boundaries of said city or town, and no part of said route is owned or maintained by the commonwealth.

After a road has been designated as a scenic road any repair, maintenance, reconstruction, or paving work done with respect thereto shall not involve or include the cutting or removal of trees, or the tearing down or destruction of stone walls, or portions thereof, except with the prior written consent of the planning board, or if there is no planning board, the selectmen of a town, or the city council of a city, after a public hearing duly advertised twice in a newspaper of general circulation in the area, as to time, date, place and purpose, the last publication to occur at least seven days prior to such hearing; provided, however, that when a public hearing must be held under the provisions of this section and under section three of chapter eighty-seven prior to the cutting or removal of a tree, such hearings shall be consolidated into a single public hearing before the tree warden and the planning board, or if there is no planning board, the selectmen of a town, or the city council of a city, and notice of such consolidated public hearing shall be given by the tree warden or his deputy as provided in said section three of chapter eighty-seven. Any city or town making said scenic road designation may make an ordinance or bylaw establishing that a violation of this paragraph shall be punished by a fine not to exceed three hundred dollars. (*Amended by 1989, 360 eff. 12-17-89.*)

Designation of a road as a scenic road shall not affect the eligibility of a city or town to receive construction or reconstruction aid for such road pursuant to the provisions of chapter ninety.